Construction Documents November, 08 2019

York Main Building - HVAC Replacement York Agricultural Institute Jamestown, Fentress County, Tennessee SBC #168/001-01-2019

OWNER State of Tennessee, Department of General Services for Department of Education

DRAWING INDEX M0.01 **HVAC - LEGENDS AND SCHEDULES** M0.11 HVAC - DETAILS AND SPECS M0.21 **HVAC - CONTROLS** M0.22 HVAC - DEMOLITION FLOOR PLAN - PART A M1.02 **HVAC - DEMOLITION FLOOR PLAN - PART B** M1.11 HVAC - DEMOLITION ROOF PLAN - PART A HVAC - DEMOLITION ROOF PLAN - PART B M2.01 HVAC - FLOOR PLAN - PART A M2.02 **HVAC - FLOOR PLAN - PART B** HVAC - ROOF PLAN - PART A HVAC - ROOF PLAN - PART B E0.01 ELECTRICAL - LEGENDS E1.11 POWER - DEMOLITION ROOF PLAN - PART A POWER - DEMOLITION ROOF PLAN - PART B E2.01 POWER - FLOOR PLAN - PART A E2.02 POWER - FLOOR PLAN - PART B E2.11 POWER - ROOF PLAN - PART A POWER - ROOF PLAN - PART B E2.12 PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECTI. EXISTING PA THVEALESCTRICAL - DETAILS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF MARK. **ELECTRICAL - DETAILS ELECTRICAL - SPECIFICATIONS**

PLAN REVIEW DATA

1. APPLICABLE CODES
2012 International Building Code
2012 International Fire Prevention Code
2012 International Mechanical Code
2012 International Plumbing Code
2012 NFPA 101 Life Safety Code
2011 NFPA 72 National Fire Alarm and Signaling Code
2011 National Electrical Code
2010 ASHRAE Standard 62

2. OCCUPANCY TYPE:
Group E: Education

3. CONSTRUCTION TYPE:
Group E, Type II-B Unsprinklered

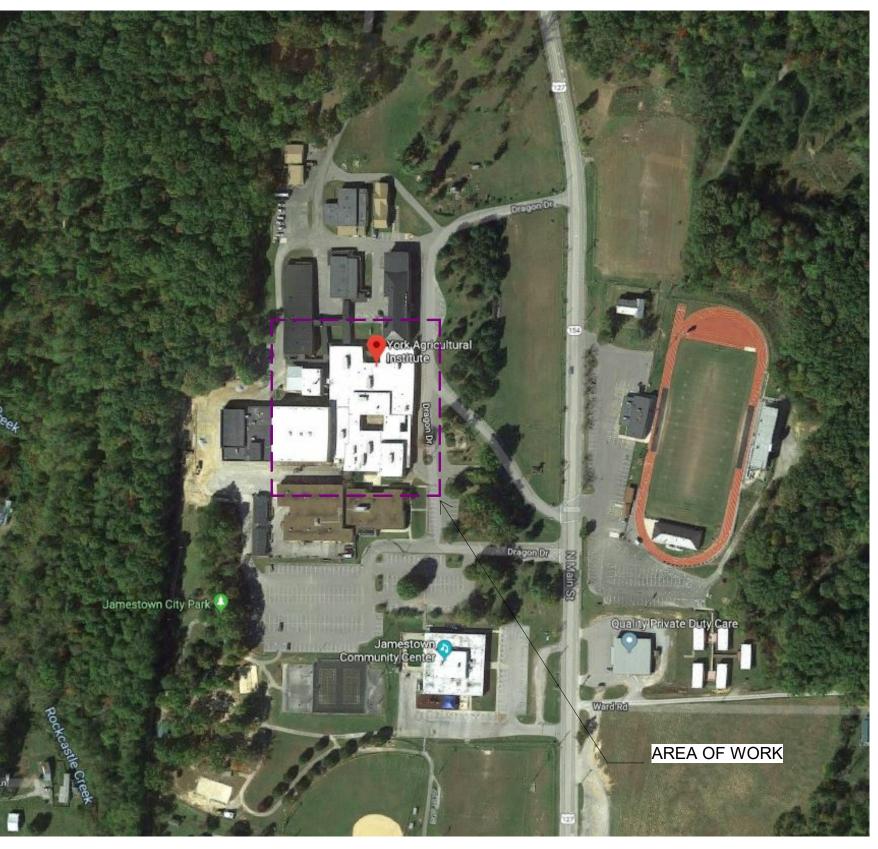
4. BUILDING AREA:
71,249 sf

51 Century Blvd., Suite 350 Nashville, TN 37214 P: (615) 265-8071

EDMONDSENGINEERING.COM Project No. BNA19125







PROJECT LOCATION: 701 N MAIN ST, JAMESTOWN, TN 38556

GENERAL NOTES 1. MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND SUBJECT TO REQUIREMENTS OF ARCHITECTURAL DRAWINGS AND CONDITIONS EXISTING IN THE FIELD. MECHANICAL DRAWINGS INDICATE GENERALLY THE LOCATION OF COMPONENTS AND ARE NOT INTENDED TO SHOW ALL FITTINGS OR ALL DETAILS OF THE WORK TO BE PERFORMED. 2. FOLLOW THE DRAWINGS CLOSELY, COORDINATE DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. DO NOT SCALE MECHANICAL DRAWINGS FOR LOCATIONS OF SYSTEM COMPONENTS. 3. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS. 4. MAKE NO CHANGES WITHOUT THE DESIGNER'S WRITTEN PERMISSION. IN CASE OF DOUBT, OBTAIN DESIGNER'S DECISION BEFORE PROCEEDING WITH WORK. FAILURE TO FOLLOW THIS INSTRUCTION SHALL MAKE THE CONTRACTOR LIABLE FOR DAMAGE TO OTHER WORK AND RESPONSIBLE FOR REMOVING AND REPAIRING DEFECTIVE OR MIS-LOCATED WORK IN PROPER 5. DO NOT SCALE DRAWINGS TO LOCATE DIFFUSERS AND EQUIPMENT. COORDINATE WITH NEW AND EXISTING LIGHTING, ELECTRICAL CONDUIT, AND ALL EXISTING FIELD CONDITIONS. 6. PRIOR TO PREPARING SUBMITTALS, VERIFY ALL EQUIPMENT VOLTAGES WITH ELECTRICAL DRAWINGS AND ELECTRICAL CONTRACTOR AND REPORT ANY INCONSISTENCIES TO THE DESIGNER PRIOR TO ORDERING EQUIPMENT. ANY FAILURE TO DO SO WILL MAKE THE MECHANICAL CONTRACTOR RESPONSIBLE FOR ANY EQUIPMENT ORDERED WITH THE INCORRECT VOLTAGE.

PROTECT MECHANICAL EQUIPMENT FROM DAMAGE DURING CONSTRUCTION. WHEN INSTALLATION IS COMPLETE, CLEAN EQUIPMENT AS REQUIRED AND PROVIDE ALL NEW FILTERS.
 INSTALL ALL EQUIPMENT TO PROVIDE NORMAL SERVICE ACCESS TO ALL COMPONENTS. INSTALL IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. IF MANUFACTURERS

INSTRUCTIONS CONFLICT WITH CONTRACT DOCUMENTS, OBTAIN DESIGNER'S DECISION

BEFORE PROCEEDING.

9. FURNISH ACCESS DOORS FOR VALVES, FIRE DAMPERS, DAMPERS, CONTROLS, AIR VENTS, TRAP CLEAN OUTS, AND OTHER ITEMS LOCATED ABOVE NON-LIFTOUT CEILINGS OR BEHIND PARTITIONS OR WALLS.

10.PROVIDE FIRE DAMPERS IN DUCTWORK, GRILLES, AND REGISTERS WITH FIRE RATING EQUAL TO RATING OF WALL OR CEILING. ALL FIRE DAMPERS MAY OR MAY NOT BE SHOWN ON MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE ALL FIRE RATED WALL AND CEILING LOCATIONS AND RATINGS WITH ARCHITECTURAL DRAWINGS.

11.ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND STANDARDS (SEE

12.COORDINATE EXACT LOCATION OF ALL WALL MOUNTED DEVICES (THERMOSTATS, SENSORS, ETC.) WITH ARCHITECT PRIOR TO ROUGH IN. ALL WALL MOUNTED DEVICES SHALL BE INSTALLED 48"A.F.F. TO THE CENTERLINE OF THE DEVICE (UNLESS NOTED OTHERWISE).

	(CFM) S	SUPPLY DIFFUSER		
	(CFM) R	FLEXIBLE CONNECTION RETURN GRILLE	HWS	HOT WATER SUPPLY PIPING.
	(CFM) E	EXHAUST GRILLE T THERMOSTAT	HWR	HOT WATER RETURN PIPING.
	(CFM) T	TRANSFER AIR GRILLE H HUMIDISTAT	—— D ——	DRAIN PIPING.
3	(CFM) SR	SIDEWALL REGISTER	AAV 🚉 OR	AAV - AUTO. AIR VENT
	Ø	ROUND DUCT SYMBOL	AAV A T OR U	(MARKED OR SHOWN)
	WXH	RECTANGULAR DUCT		GATE VALVE.
				GLOBE VALVE.
R		RECTANGULAR SUPPLY DUCT FLOOR OR ROOF PENETRATION		BALL VALVE.
,		RECTANGULAR RETURN AIR OR EXHAUST DUCT FLOOR OR ROOF PENETRATION		TWO-WAY AUTO CONTROL VALVE.
		RECTANGULAR SUPPLY DUCT TURNING UP		THREE-WAY AUTO CONTROL VALVE.
				BUTTERFLY VALVE.
		RECTANGULAR SUPPLY AIR DUCT TURNING DOWN		BUTTERFLY VALVE.
		RECTANGULAR RETURN AIR OR EXHAUST DUCT TURNING UP		
			——————————————————————————————————————	PRESSURE REDUCING VALVE.
		RECTANGULAR RETURN AIR OR EXHAUST DUCT TURNING DOWN	$\bigcirc+$	PIPE TURNING UP.
		FLAT OVAL TURNING UP.	$\bigcirc +$	PIPE TURNING DOWN.
		FLAT OVAL TURNING DOWN.	——————————————————————————————————————	BRANCH OFF TOP OF MAIN.
	9 9	ROUND DUCT TURNING UP	——————————————————————————————————————	BRANCH OFF BOTTOM OF MAIN.
		ROUND DOCT TORNING OF		BRANCH OFF SIDE OF MAIN.
		ROUND DUCT TURNING DOWN		CALIBRATED BALANCING VALVE
	C	MAXIMUM 5' FLEXIBLE DUCT ALL BRANCH DUCTS		ECCENTRIC REDUCER
		RECTANGULAR 90° ELBOW WITH TURNING VANES FOR SUPPLY. FLAT OVAL SQUARE ELBOWS ONLY WHERE REQUIRED AND SHOWN.		STRAINER (Y)
				FLEXIBLE CONNECTION IN PIPING.
		ROUND AND FLAT OVAL ELBOWS. DIE CAST THROUGH 5" ROUND, 5 PIECE 6" ROUND AND ABOVE		LINION
				UNION
		RISE OR DROP IN DUCT		PETES PLUG
		RECTANGULAR BRANCH OFF OF RECTANGULAR DUCT		SLOPE DOWN IN DIRECTION OF ARROW.
		WITH MANUAL DAMPER		CHECK VALVE
		SPIN-IN WITH MANUAL DAMPER		ASME PRESSURE RELIEF VALVE.
		SFIN-IN WITH MANUAL DAMFER	\ <u>\</u>	NOWE I REGOONE NEELE VALVE.
		MANUAL DAMPER	DPA	DIFFERENTIAL PRESSURE ALARM
				
	FD FD	FIRE DAMPER (PROVIDE ACCESS DOOR)		
		ALITOMATIC DAMPER		
	d AD	AUTOMATIC DAMPER		

DUCTWORK LEGEND

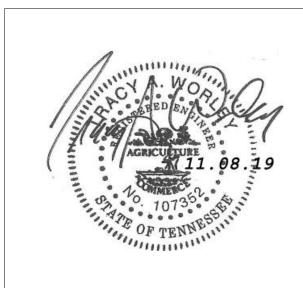
COMBINATION SMOKE/FIRE DAMPER (PROVIDE ACCESS DOOR)

																							V	VARIA	BLE VC	LUME F	ROOFT	OP UNIT	S									Г-						- ¬					
					SUPPLY	FAN								ETURN	'EXHAU	ST FAN			004.05					CI	HILLED W	ATER COO	OLING COI	L					НО	T WATER	HEAT CO	L				HOT WAT	ER PREHEA	COIL (ALTI	ERNATE)			MAX. OPERAT	TING	UNIT	BASIS OF
ARK	CFM IN	NTERNAL S.P	EXTERN S.P	AL TOTA	L QTY.	HP	MO ⁻ V/Φ/		MCA	MOCP	CF	"W E.S		Υ.	HP	MOTOR V/Φ/Hz	: FLA		OSA CFI (MIN/MA)	X)′	AIR ENT. DB °F W	. AIR VB °F DB	LVG. 3 °F WE	_	DLING CAI	PACITY NSIBLE	GPM	EWT	LWT	MAX F	F.V. (FPM)	E.A.T. (°F D	B) L.A.7	T. (°F DB)	MBH	GPM	MAX (FP		A.T. (°F DB)	L.A.T. (°F D	В) МВН	GPM	MAX F.V (FPM)	v.	FILTERS ACCESSORIES	WEIGHT		NFIGURATION	DESIGN TRA
U-1 12,	2,000	1.9	2.5	4.5	2	7.5 EAC	H 460/3	3/60	33.87	50.0	11,2	0 1	2	3	EACH	460/3/6	0 3.7	70	800/12,00	00 76.	7 63.4	4 53.9	53.5	5 347.9	MBH 299	9.7 MBH	47.0	45°F	59.7°F		500								60.0	92.11	417.9	41.7	500	l	A 12345	4,225 LBS.	S	x	UCCAK25C1D
U-2 11,	1,000	1.7	2.5	4.3	2	7.5 EAC	H 460/3	3/60	33.87	50.0	11,0	0 2	2	3 1	ACH	460/3/6	0 3.7	70	750/11,00	00 76.	7 63.4	4 53.6	53.2	2 326.8	MBH 278	3.7 MBH	44.0	45°F	59.8°F		500								60.0	93.56	400.4	39.9	500	!	A 12345	4,225 LBS.	8.	x	UCCAK25C1E
U-3 10,	0,000	3.5	3.5	3.5	1	10	460/3	3/60	17.50	30.0	9,30) 2.			7.5	460/3/6	0 11	.0	700/10,00	00 76.	7 63.4	4 55.0	53.9	9 278.4	MBH 238	3.4 MBH	41.0	45°F	58.5°F		500	55.0		81.5	287.9	28.75	500		10.0	50.0	433.8	43.3	500		A 12345	5,300 LBS.	8.	Y	CSAA02
U-5 10,	0,500	3.5	3.5	3.5	1	10	460/3	3/60	17.50	30.0	9,80) 2			7.5	460/3/6	0 11	.0	700/10,50	00 76.	7 64.0	0 55.0	54.0	289.9	MBH 250).4 MBH	41.0	45°F	59.1°F		500	55.0		80.9	295.3	29.49	500) 	10.0	50.0	455.5	45.5	500	İ	A 12345	5,375 LBS.	S	Y	CSAA02
U-7 4,0	1,000	3.5	3.5	3.5	1	5	460/3	3/60	10.25	15.0	2,80	2.			3	460/3/6	0 4.8	80	1,200/4,00	00 76	7 63.4	4 55.0	53.7	7 113.4	MBH 95	.4 MBH	24	45°F	50.5°F		500	55.0		80.0	108.4	10.83	500		10.0	50.0	173.5	17.3	500		A 12345	3,280 LBS.	S.	Y	CSAA00
UNIT TYPE PENETRA ROP PENE OTHER ACI UNIT CONI TOP HORIZ MIXING/OU COIL WITH	ATION DE LE MARIAGE CCEPTAP NFIGURATI IZONTAL I UTSIDE A H ACCESS IZONTAL I UTSIDE A	EMS AS PAN LE MANUI TION: RETURN F IR; FILTEF S; VFD/CO RETURN F IR; FILTEF	FAN; ECO SECTIO NTROLS; FAN; ECO R SECTIO	BSEDTWR	HINOMONDE CARRIER ETURN/EX WATER C PLY FAN. ETURN/EX ER COIL V	HAUST; DIL WITH HAUST; ITH ACC	ECONOM ACCESS	IZER ;HOTWAT IZER LLED WA	TER					A	FILTER 4" PLEA		ERV 8 (SI	IDE ACCE	ESS).		(1) (2) (3) (4)	ACCESS PROVIDE PROVIDE	LIGHT V SECTION E VFD FO E 3-WAY E CURB	WITH FAIONS, MI FOR BAL Y CHILLI	XING BOX ANCING. ED WATEI	SECTION	I AND DISC	CHARGE PI	FAN SECTION	ON,	1. 2. 3. 4. 5. 6. 7. 8. 9.	MAXIMUM C MAXIMUM C MAXIMUM H MAXIMUM H SUPPLY & R CONTRACTO COOLING CO ESP DOES N CASING AIR ALL COOLIN DRAIN PANS	OOLING CEATING CEATING CETURN FAOR TO VEIDILS SHALIOT INCLULEAKAGEGOOLS SEATING COILS	COIL AIR PI OIL AIR PF OIL WATE ANS SHALI RIFY COIL LL BE 6 RC JDE ANY P SHALL NO SHALL HAN	RESSURE RESSURE RESSURE R PRESSU L BE DIRE CONNECT W MIN. AT PRESSURE OT EXCEE VE STAINL	DROP = 1.0 DROP = 0.2 IRE DROP OT DRIVE F TON AND A ID 10 FPI M DROP DUI D LEAK CL	0" W.G. 25" W.G. = 5 FT. PLENUM FA ACCESS DO IIN. E TO UNIT ASS 6 PER	ANS. PRO OOR HAN INTERNA RASHRAE	VIDE 2" ISOL D LOCATION L COMPONE	ATION BASE S PRIOR TO NTS. SELEC	ORDERING (NIT.	TERS.		ADD ALTERNATE 1				

EDMONDS

PIPING LEGEND

51 Century Boulevard, Suite 350 Nashville, TN 37214 P: (615) 265-8071 EDMONDSENGINEERING.COM



ORK MAIN BUILDING
HVAC REPLACEMENT
701 N Main St,

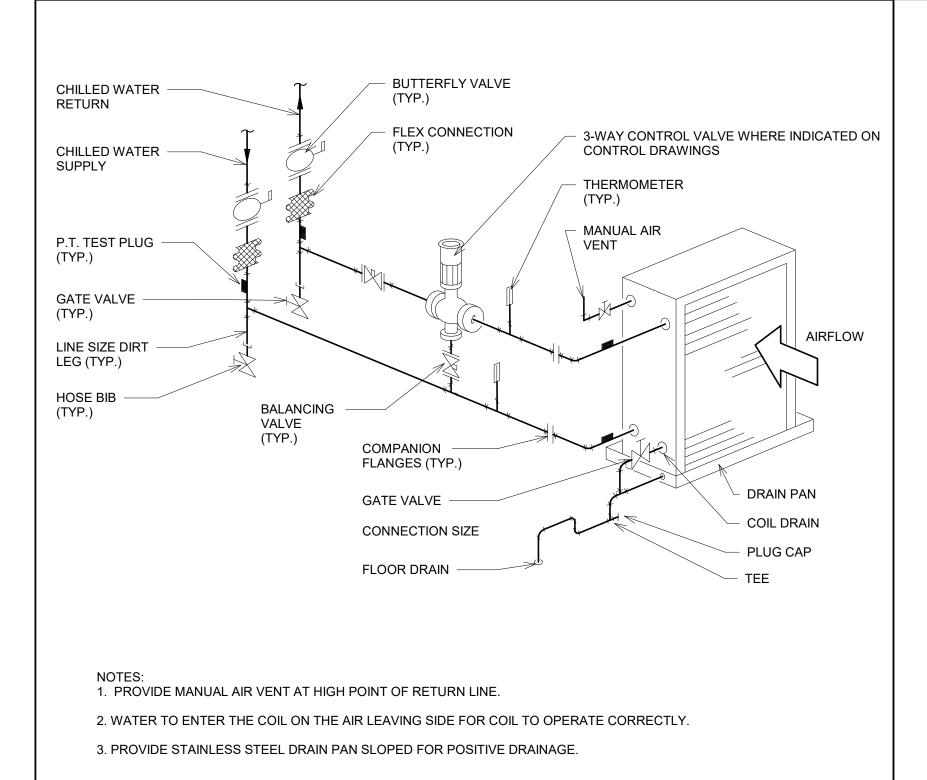
HVAC - LEGENDS AND SCHEDULES.

REVISIONS

NO DESCRIPTION

BNA19125

M0.01



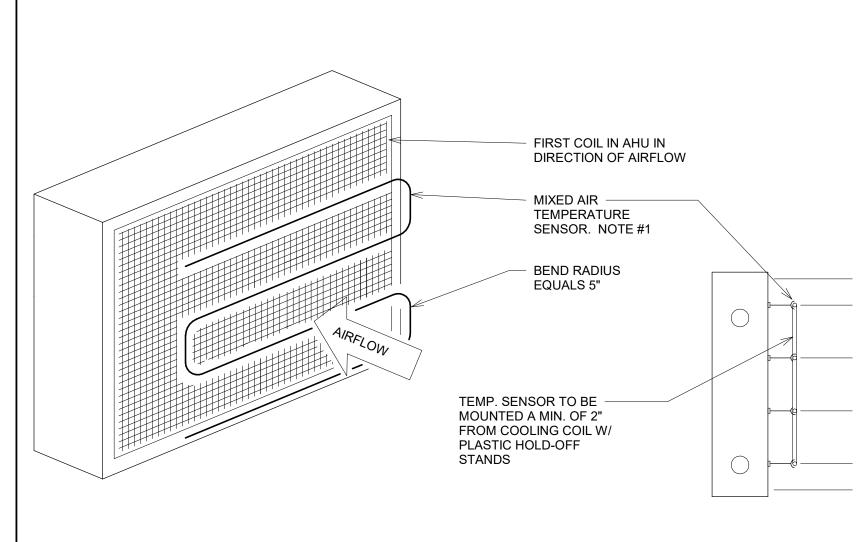
MOISTURE CONDENSATE DRAIN LINE (TYP) PIPE SUPPORT MIN 2" AIR SPACE

PIPING AT COOLING COIL (3-WAY VALVE) NOT TO SCALE

VALVE) TERMINATION DETAIL OF MOISTURE CONDENSATE LINE

HOT WATER

RETURN



NOTES

1. PROVIDE MIN. 1 LINEAR FOOT OF TEMPERATURE SENSOR PER SQUARE FOOT OF COIL.

2. PROVIDE ON THE ENTERING SIDE OF COIL FOR MIXED AIR AND FREEZESTAT READINGS.

3. PROVIDE ON THE LEAVING SIDE OF COIL FOR PREHEAT COIL TEMP READING.

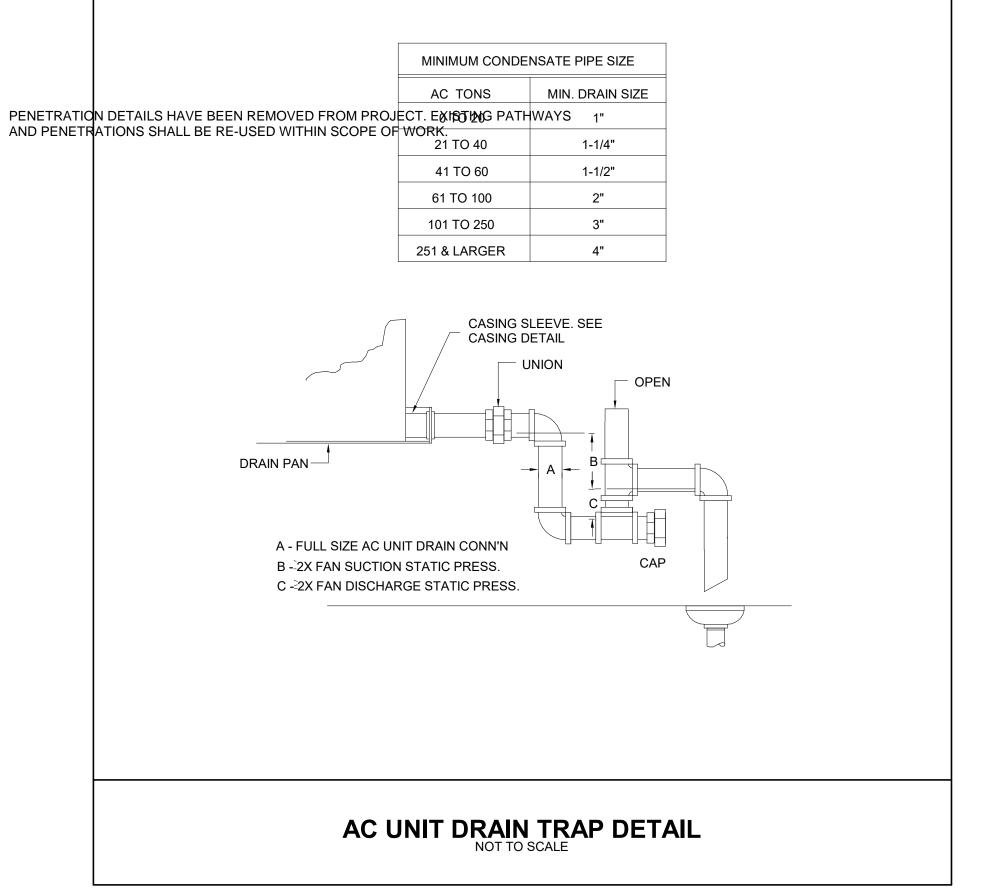
TEMPERATURE SENSOR MOUNTING DETAIL

NOT TO SCALE

PT TEST PLUG - CONTROL (TYP.) VALVE NOTE #2 MANUAL SUPPLY WATER AIR VENT RETURN BALL VALVE (TYP.) LINE SIZE -NOTE #3 DIRT LEG (TYP.) HOSE BIB (TYP.) **STRAINER THERMOMETER** COMPANION FLANGES -(TYP.) COIL DRAIN NOTES PROVIDE AUTOMATIC AIR VENT AT HIGH POINT OF RETURN LINE. 2. WATER TO ENTER COIL ON AIR LEAVING SIDE FOR COIL TO OPERATE CORRECTLY. BALANCING AND SHUT-OFF VALVE, PROVIDE 3-PIPE DIAMETERS STRAIGHT LENGTH OF PIPE BEFORE AND AFTER VALVES.

PIPING AT PREHEAT & REHEAT HOT WATER COIL

NOT TO SCALE



MECHANICAL SPECIFICATIONS:

DRAWINGS SHALL NOT BE SCALED.

GENERAL CONDITIONS:

1) CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE OPERATIONAL HEATING, VENTILATING, AND COOLING SYSTEM WHICH MEETS ALL GOVERNING CODES AND IN ACCORDANCE WITH THE DESIGN DRAWINGS.

2) ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD MECHANICAL CODE, NFPA REQUIREMENTS, AND ALL LOCAL CODES.

3) THE CONTRACTOR SHALL PAY FOR ALL FEES, PERMITS, AND CHARGES AS REQUIRED TO

4) MECHANICAL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF FINAL

5) DRAWINGS ARE <u>DIAGRAMMATIC</u> AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS.

6) CONTRACTOR SHALL SUBMIT FOR REVIEW PDF COPY OF ALL EQUIPMENT, DEVICES, AND

MATERIALS USED FOR THE JOB. ALLOW A MINIMUM OF 14 DAYS REVIEW TIME FOR SCHEDULING PURPOSES. WHEN REQUESTED, SUBMIT ANY PRODUCT SAMPLES TO DESIGNER FOR REVIEW.

7) PROVIDE ACCESS DOORS IN DUCTS, WALLS, AND CEILINGS AS REQUIRED TO ACCESS DAMPERS, VALVES, AND OTHER ENCLOSED ITEMS. COORDINATE LOCATION OF ALL DOORS WITH GENERAL CONTRACTOR.

AIR DEVICES:

8) FIRE DAMPERS TO BE TYPE "B" UNLESS OTHERWISE NOTED. INSTALLATION TO BE IN STRICT ACCORDANCE WITH MANUFACTURER'S U.L. LISTED INSTALLATION INSTRUCTIONS AND SMACNA FIRE

9) COORDINATE LOCATION AND PROVIDE DUCT ACCESS DOORS FOR ACCESS TO ALL FIRE DAMPERS. DUCT ACCESS DOORS MAY BE OMITTED WHERE TYPE "A" FIRE DAMPERS ARE ACCESSIBLE THROUGH SIDEWALL REGISTER FACE. ENSURE DUCT ACCESS DOORS AND DAMPERS ARE ACCESSIBLE THROUGH CEILINGS AND WALLS. LOCATE DUCT ACCESS DOORS ABOVE SPACES WITH LAY-IN CEILINGS OR EXPOSED CEILINGS WHERE POSSIBLE. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING TYPES.

DUCTWORK:

10) ALL AIR DISTRIBUTION SYSTEM(S) SHALL BE TESTED AND BALANCED IN ACCORDANCE WITH A.A.B.C. REQUIREMENTS TO WITHIN FIVE PERCENT (5%) OF THE VALUES SHOWN ON THE DRAWINGS. THREE COPIES OF A CERTIFIED AIR BALANCE REPORT SHALL BE GIVEN TO THE DESIGNER PRIOR TO PROJECT CLOSEOUT.

11) ALL MEDIUM-PRESSURE DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE 1995 SMACNA DUCT CONSTRUCTION MANUAL FOR 4" W.G. STATIC PRESSURE AND CLASS "A" SEALS. DUCT SEALANT TO BE MINERAL IMPREGNATED WOVEN FILTER TAPE AND PLASTIC TYPE ACTIVATOR/ADHESIVE AS MANUFACTURED BY HARDCAST.

12) ALL LOW-PRESSURE DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE 1995 SMACNA HVAC DUCT CONSTRUCTION MANUAL FOR 2" W.G. STATIC PRESSURE AND CLASS "C" SEALS. DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL. SEAL ALL

TRANSVERSE JOINTS WITH DUCT SEALANT, HARDCAST #P301.

13) SUPPORT ALL DUCTWORK WITH SUITABLE SHEARED STRIPS OF GALVANIZED METAL OF 1" X 1/8" STEEL BAND IRON HANGERS ON EACH SIDE OF DUCT. SPACE HANGERS MAXIMUM 8 FEET ALONG DUCT AND SECURE HANGERS TO STRUCTURE AS REQUIRED.

14) ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE CLEAR. ALLOWANCE MUST BE MADE IN SHEET METAL SIZE WHERE DUCT LINER IS SPECIFIED.

15) ALL SUPPLY AND OUTSIDE AIR DUCT TO BE EXTERNALLY INSULATED WITH 1-1/2" THICK, 1 LB. DENSITY, FLEXIBLE, FACTORY-REINFORCED GLASS FIBER BLANKET WITH FOIL-FACED VAPOR BARRIER JACKET. SEAL ALL SEAMS, RIPS, TEARS, STAPLES, ETC., IN VAPOR BARRIER WITH VAPOR BARRIER MASTIC EMBEDDED WITH FIBERGLASS MESH CLOTH. PRESSURE SENSITIVE TAPE NOT

16) ALL RETURN DUCT TO BE INTERNALLY INSULATED WITH 1" THICK, 1-1/2 LB. DENSITY, NEOPRENE-COATED FIBERGLASS MATT-FACED FLEXIBLE DUCT LINER. ALLOWANCE MUST BE MADE IN DUCT SIZES TO ACCOMMODATE LINER.

17) WHERE BRANCH TAPS OCCUR, PROVIDE INDIVIDUAL SPIN-IN FITTINGS WITH MANUAL-VOLUME DAMPERS FOR BALANCING. DO <u>NOT</u> USE TYPE WITH AIR SCOOP/EXTRACTOR. ADDITIONALLY, PROVIDE OPPOSED-BLADE VOLUME DAMPERS AT EACH AIR TERMINAL DEVICE.

18) PROVIDE CANVAS, FLAME RETARDANT DUCT CONNECTORS AT ALL CONNECTIONS OF FANS TO DUCTWORK.

PIPING:

STEEL PIPING.

19) ALL MOISTURE CONDENSATE DRAIN (MCD) LINES SHALL BE INSULATED WITH 1/2" ARMAFLEX AP TYPE INSULATION RATED FOR PLENUM USE WHEN USED INDOORS. LINES SHALL BE "DWV" COPPER WITH 50-50 SOLDER JOINTS OR SCHEDULE 40 GALVANIZED STEEL INDOORS AND SCHEDULE 40 PVC OUTDOORS. ALL FITTINGS SHALL BE DRAINAGE PATTERN TYPE. SLOPE PIPING MINIMUM 1/8" PER FOOT TOWARD DRAIN. PROVIDE LINE SIZE CLEANOUTS AT P-TRAP AND SPACED MAXIMUM 50'-0" ON CENTER. SEE PLUMBING DRAWINGS FOR EXACT LOCATION OF FLOOR DRAINS, HUB DRAINS, AND SINK P-TRAP CONNECTIONS FOR MCD DISCHARGE.

20) HEATING HOT WATER AND CHILLED WATER PIPING SHALL BE TYPE "L" HARD DRAWN COPPER TUBING, ASTM B-88. PROVIDE SWEAT FITTINGS, ASTM B-62, WROUGHT COPPER WITH SWEEP PATTERN. PROVIDE BRASS ISOLATION ADAPTERS AT COPPER PIPING CONNECTIONS TO

21) INSULATE ALL CHILLED AND HEATING HOT WATER SUPPLY PIPING WITH 1" THICK JACKETED GLASS FIBER INSULATION WITH ALL-SERVICE JACKET EQUIVALENT TO MANVILLE "MICRO-LOK 650." SEAL ALL STAPLES, RIPS, TEARS, JOINTS, ETC., WITH VAPOR BARRIER MASTIC.

22) INSULATE ALL CHILLED AND HEATING HOT WATER PIPING AND MOISTURE CONDENSATE DRAIN (MCD) LINES WITH 3/4" THICK FLEXIBLE ELASTOMERIC INSULATION EQUAL TO ARMAFLEX AP.

23) PATCH ALL RATED FLOOR AND RATED WALL PENETRATIONS WITH U.L. APPROVED ASSEMBLIES IN ACCORDANCE WITH SBC CHAPTER 10 REQUIREMENTS.

COORDINATION REQUIREMENTS:

24) THE CONTRACTOR IS REQUIRED TO VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS PRIOR TO SUBMITTING A BID.

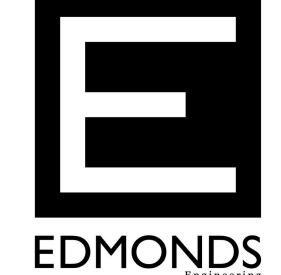
THE DRAWINGS MAY NOT SHOW ALL EXISTING ITEMS OR CONDITIONS. CONTRACTOR SHALL NOT RECEIVE EXTRA PAYMENT FOR REQUIREMENTS WHICH CAN BE INFERRED THROUGH OBSERVATION OF EXISTING CONDITIONS AT THE SITE. IN THE EVENT CONCEALED CONDITIONS ARE ENCOUNTERED WHICH MAY VARY SIGNIFICANTLY FROM THOSE INDICATED ON THE DRAWINGS, NOTIFY THE DESIGNER BEFORE PROCEEDING WITH WORK.

26) CONTRACTOR SHALL FIELD VERIFY BY MEASUREMENT THE EXACT LOCATION OF EQUIPMENT, DUCTWORK, PIPING, STRUCTURE, AND OTHER CONDITIONS WHICH WILL AFFECT INSTALLATION. CONTRACTOR SHALL LOCATE EQUIPMENT AND ROUTE DUCTWORK AND PIPING TO AVOID CONFLICTS AND INTERFERENCES WITH EXISTING FIELD CONDITIONS.

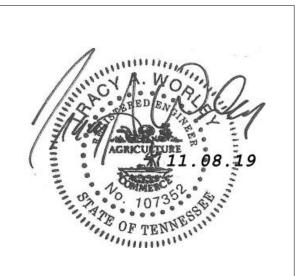
27) PRIOR TO ANY INSTALLATION, CLOSELY COORDINATE ALL MECHANICAL WORK WITH PLUMBING, FIRE PROTECTION, ELECTRICAL, ARCHITECTURAL, AND STRUCTURAL WORK.
CONTRACTOR TO ENSURE ALL EQUIPMENT AND SERVICES WILL FIT IN AVAILABLE SPACES ALLOWING CEILING HEIGHTS INDICATED ON ARCHITECTURAL PLANS. INSTALL EQUIPMENT SO AS TO PROVIDE CLEARANCES SHOWN ON DRAWINGS AND AS RECOMMENDED BY MANUFACTURER FOR AIRFLOW, SERVICE, MAINTENANCE, AND FILTER REMOVAL AS APPLICABLE.

28) ALL CUTTING AND PATCHING SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
ALL PATCHING SHALL RESTORE EACH DAMAGED SURFACE TO ITS ORIGINAL FINISH.

29) ALL EXPOSED DUCTWORK, PIPING, AND EQUIPMENT IN FINISHED SPACES TO BE INSTALLED AS HIGH AS POSSIBLE ABOVE FINISHED FLOOR.



51 Century Boulevard, Suite 350 Nashville, TN 37214 P: (615) 265-8071 EDMONDSENGINEERING.COM



YORK MAIN BUILDIN HVAC REPLACEMEN

HVAC - DETAILS AND SPECS

REVISIONS
DESCRIPTION
D

BNA19125

M0.11

DATE: 11-08-19

8/2019 4:25:46

Variable Air Volume - RTU-3,5,7 Run Conditions - Requested: The unit shall run whenever: Any zone is occupied. OR a definable number of unoccupied zones need heating or cooling. The unit shall shut down and generate an alarm upon receiving a freezestat status. High Static Shutdown: The unit shall shut down and generate an alarm upon receiving an high static shutdown signal. The unit shall shut down and generate an alarm upon receiving a supply air smoke detector status. The supply fan shall run anytime the unit is commanded to run, unless shutdown on safeties. To prevent short cycling, the supply fan shall have a user definable (adj.) minimum runtime. Alarms shall be provided as follows: Supply Fan Failure: Commanded on, but the status is off. Supply Fan in Hand: Commanded off, but the status is on. Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.). Supply Air Duct Static Pressure Control: The controller shall measure duct static pressure and shall modulate the supply fan VFD speed to maintain a duct static pressure setpoint of 1.5in H2O (adj.). The supply fan VFD speed shall not drop below 30% (adj.). Alarms shall be provided as follows: • High Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) greater than setpoint. Low Supply Air Static Pressure: If the supply air static pressure is 25% (adj.) less than setpoint. Supply Fan VFD Fault. Return Fan: The return fan shall run whenever the supply fan runs. Alarms shall be provided as follows: Return Fan Failure: Commanded on, but the status is off. Return Fan in Hand: Commanded off, but the status is on. Return Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.). Return Airflow: The return fan VFD shall modulate in unison with the supply fan VFD. Return airflow setpoint shall be 100% (adj.) of the supply airflow minus 1000ft3/min (adj.). The return fan VFD speed shall not drop below 20% (adj.). Alarms shall be provided as follows: High Return Airflow: If the return airflow is an adjustable percentage greater than setpoint. Low Return Airflow: If the return airflow is an adjustable percentage less than setpoint. _-----Preheating Coil Valve: The controller shall measure the mixed air temperature and modulate the preheating coil valve to maintain its setpoint 5°F (adj.) less than the supply air temperature setpoint. The preheating shall be enabled whenever: Outside air temperature is less than 60°F (adj.). AND the economizer (if present) is disabled. AND the supply fan status is on. ADD ALTERNATE — The preheating coil valve shall open for freeze protection whenever: Mixed air temperature drops from 40°F to 35°F (adj.). OR the freezestat (if present) is on. L------Supply Air Temperature Setpoint - Optimized: The controller shall monitor the supply air temperature and shall maintain a supply air temperature setpoint reset based on zone cooling and heating requirements The supply air temperature setpoint shall be reset for cooling based on zone cooling requirements as follows: The initial supply air temperature setpoint shall be 55°F (adj.). As cooling demand increases, the setpoint shall incrementally reset down to a minimum of 53°F (adj.). As cooling demand decreases, the setpoint shall incrementally reset up to a maximum of 72°F (adj.) If more zones need heating than cooling, then the supply air temperature setpoint shall be reset for heating as follows: The initial supply air temperature setpoint shall be 82°F (adj.). As heating demand increases, the setpoint shall incrementally reset up to a maximum of 85°F (adj.).

As heating demand decreases, the setpoint shall incrementally reset down to a minimum of 72°F (adj.).

Cooling Coil Va	alve: shall measure the supply air temperature and modulate the cooling coil valve to maintain its cooling setpoint.
The cooling sha	all be enabled whenever: Outside air temperature is greater than 60°F (adj.). AND the economizer (if present) is disabled or fully open. AND the supply fan status is on. AND the heating (if present) is not active.
The cooling coi	I valve shall open to 50% (adj.) whenever the freezestat (if present) is on.
Alarms shall be	provided as follows: High Supply Air Temp: If the supply air temperature is 5°F (adj.) greater than setpoint.
Heating Coil Va	alve: shall measure the supply air temperature and modulate the heating coil valve to maintain its heating setpoint.
The heating sh	all be enabled whenever: Outside air temperature is less than 65°F (adj.). AND the supply fan status is on. AND the cooling (if present) is not active.
The heating co	il valve shall open whenever: Supply air temperature drops from 40°F to 35°F (adj.). OR the freezestat (if present) is on.
Alarms shall be	e provided as follows: Low Supply Air Temp: If the supply air temperature is 5°F (adj.) less than setpoint.
F (adj.) less that	shall measure the mixed air temperature and modulate the economizer dampers in sequence to maintain a setpoint 2° an the supply air temperature setpoint. The outside air dampers shall maintain a minimum adjustable position oen whenever occupied.
The economize	or shall be enabled whenever: Outside air temperature is less than 65°F (adj.). AND the outside air temperature is less than the return air temperature. AND the supply fan status is on.
The economize	er shall close whenever: Mixed air temperature drops from 40°F to 35°F (adj.). OR the freezestat (if present) is on. OR on loss of supply fan status.
The outside an available the m fully closed.	d exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is ixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to
Minimum Outsi The outside air hours.	de Air Ventilation - Fixed Percentage: dampers shall maintain a minimum adjustable position during building occupied hours and be closed during unoccupie
	ntial Pressure Monitor: shall monitor the differential pressure across the prefilter.
Alarms shall be	e provided as follows: Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).
Mixed Air Tempore Sent (1988)	perature: Shall monitor the mixed air temperature and use as required for economizer control (if present) or preheating control (if

High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).

High Return Air Temp: If the return air temperature is greater than 90°F (adj.). Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.). Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

The controller shall monitor the return air temperature and use as required for setpoint control or economizer control (if present).

Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

present).

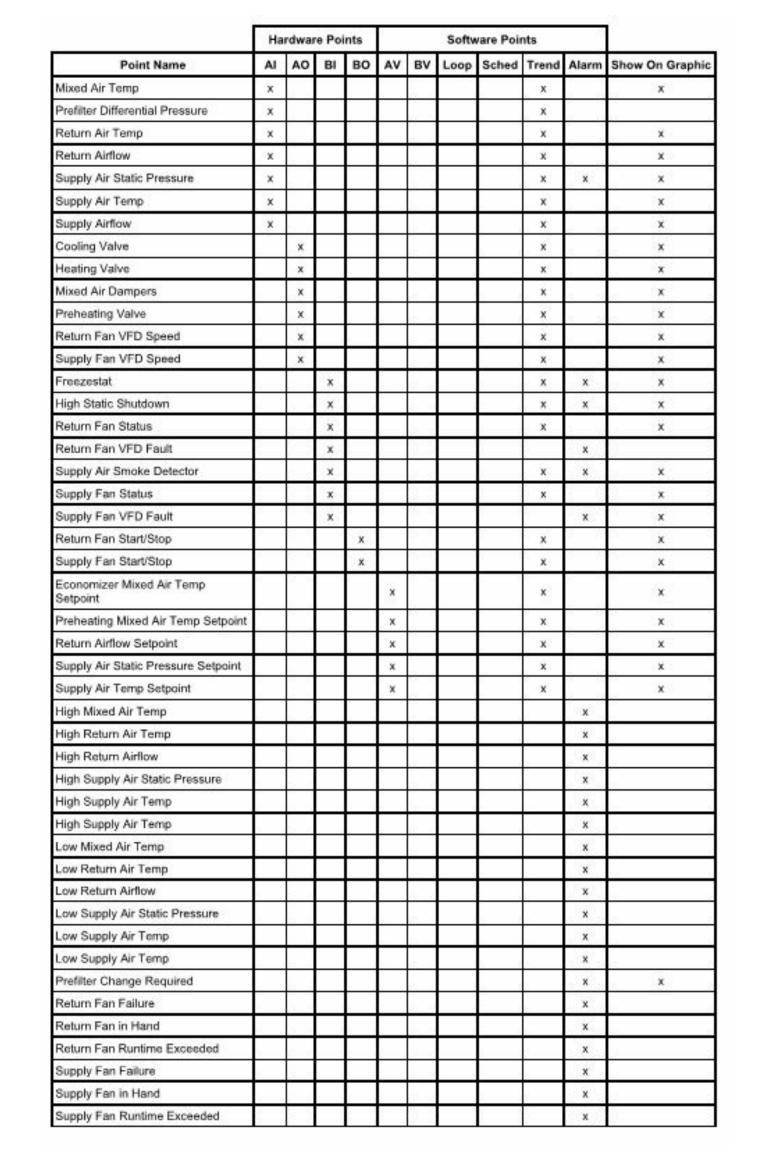
Alarms shall be provided as follows:

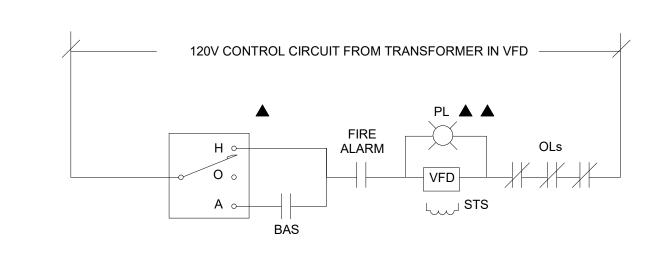
Alarms shall be provided as follows:

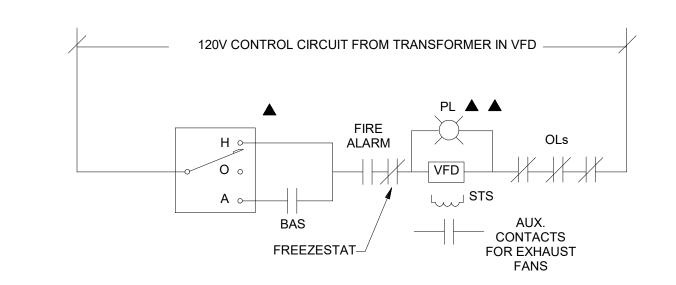
Alarms shall be provided as follows:

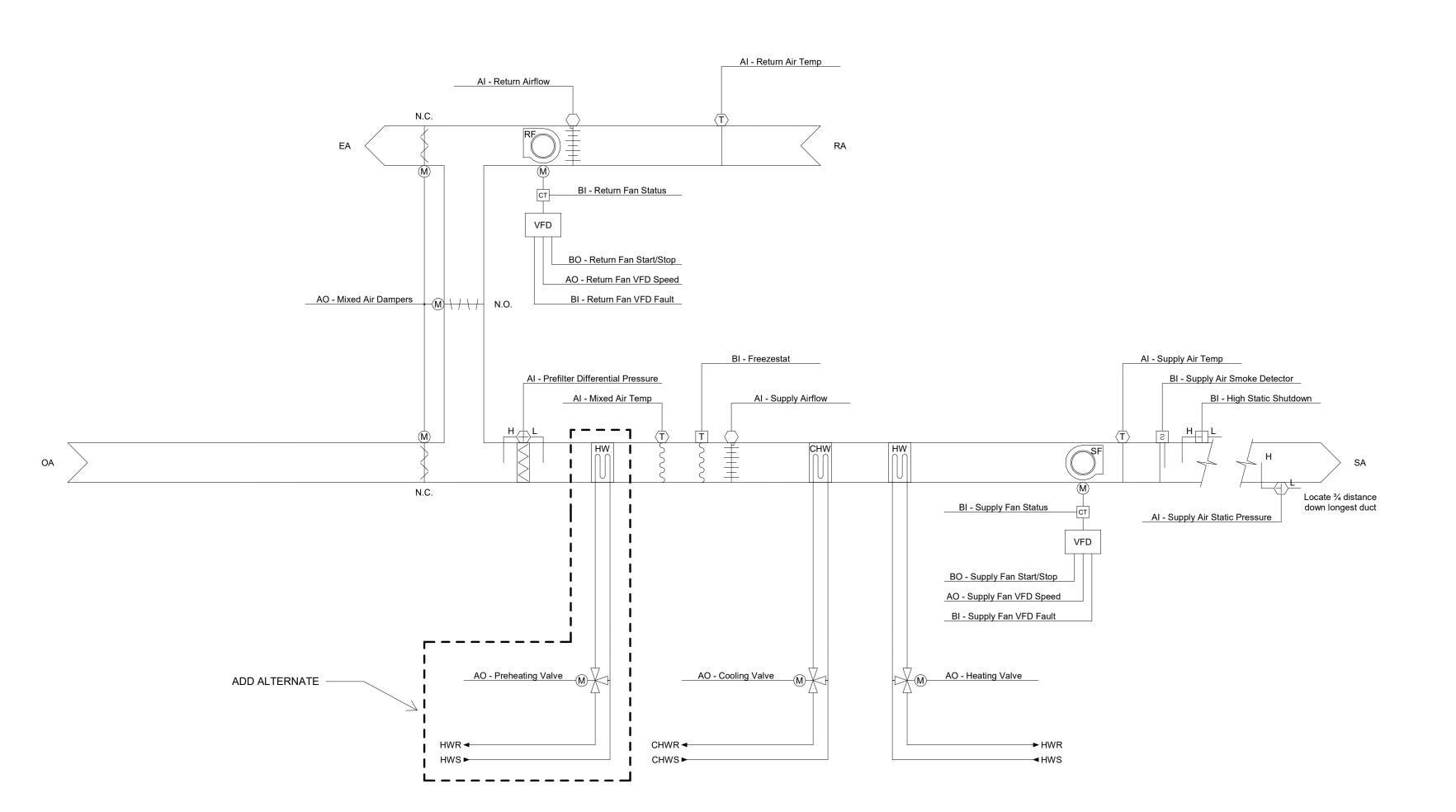
The controller shall monitor the supply air temperature.

Supply Air Temperature:



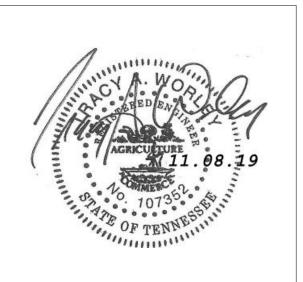






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HVAC - CONTROLS

REVISIONS

NO DESCRIPTION DATE

BNA19125

M0.21

DATE: 11-08-19

PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

019 4:25:47



Outside air temperature is greater than 60°F (adj.).

AND the supply fan status is on.

AND the heating (if present) is not active.

Outside air temperature is less than 65°F (adj.).

Mixed air temperature drops from 40°F to 35°F (adj.).

AND the supply fan status is on.

OR the freezestat (if present) is on.

OR on loss of supply fan status.

AND the economizer (if present) is disabled or fully open.

High Supply Air Temp: If the supply air temperature is 5°F (adj.) greater than setpoint.

Prefilter Change Required: Prefilter differential pressure exceeds a user definable limit (adj.).

High Mixed Air Temp: If the mixed air temperature is greater than 90°F (adj.).

High Return Air Temp: If the return air temperature is greater than 90°F (adj.).

Low Return Air Temp: If the return air temperature is less than 45°F (adj.).

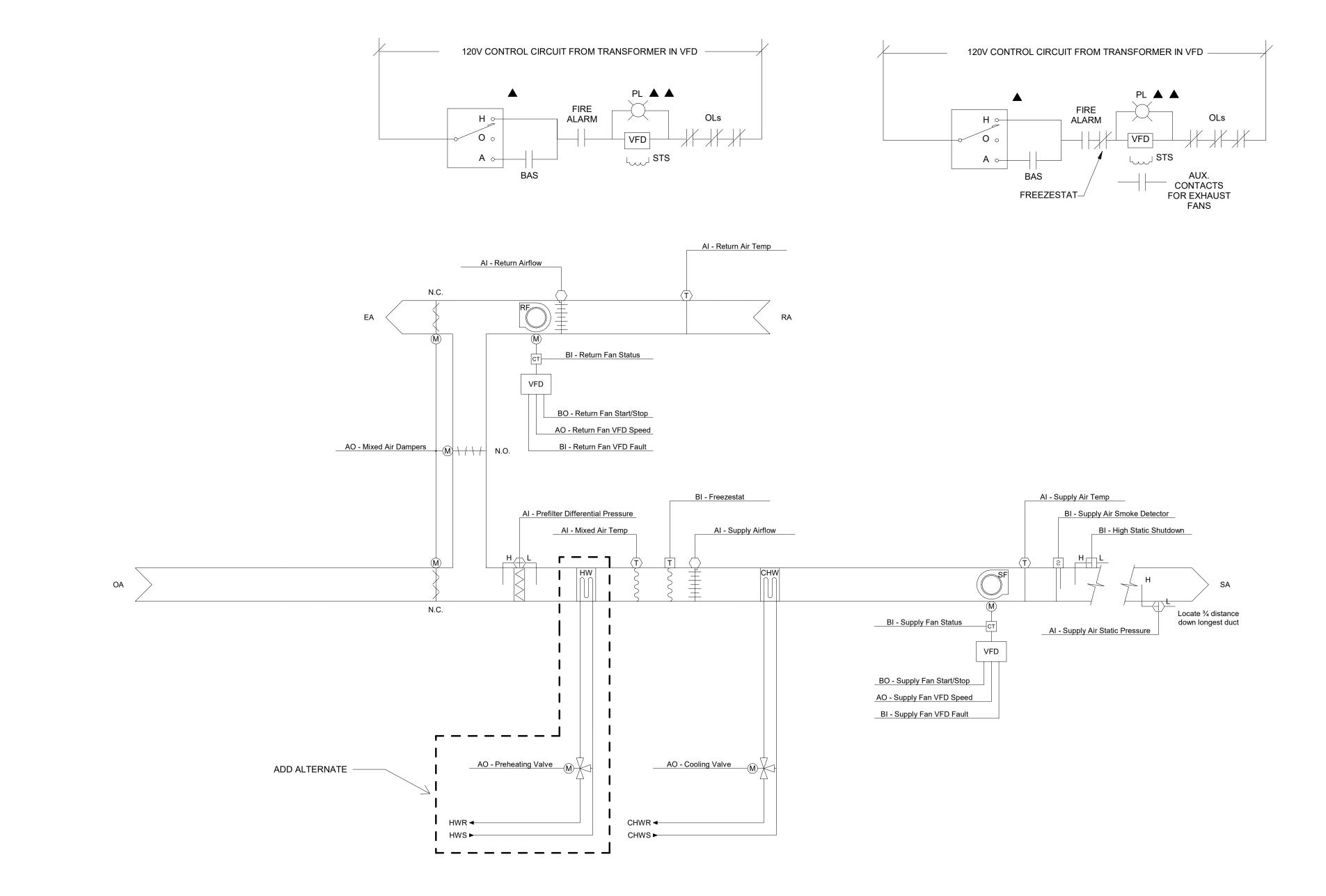
High Supply Air Temp: If the supply air temperature is greater than 120°F (adj.).

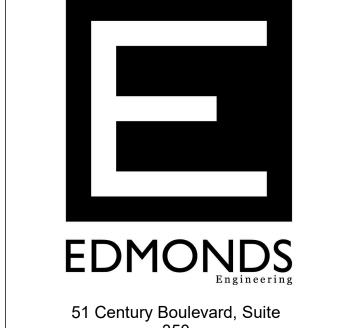
Low Supply Air Temp: If the supply air temperature is less than 45°F (adj.).

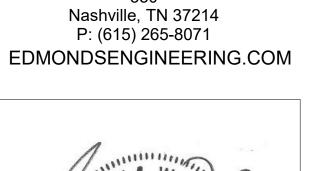
Low Mixed Air Temp: If the mixed air temperature is less than 45°F (adj.).

AND the outside air temperature is less than the return air temperature.

	н	lardwa	re Poir	nts	i.		3				
Point Name	AI	AO	ВІ	во	AV	BV	Loop	Sched	Trend	Alarm	Show On Graphi
Mixed Air Temp	х		i i		1	00 1			×		×
Prefilter Differential Pressure	×								×		
Return Air Temp	х								×		×
Return Airflow	х		9		8	ec :			×		×
Supply Air Static Pressure	×								×	×	×
Supply Air Temp	×								×		×
Supply Airflow	х		9		89	es i			×		×
Cooling Valve		×	ė.						×		×
Mixed Air Dampers		×							×		×
Preheating Valve	- 1	х	9,			e -			×		×
Return Fan VFD Speed		×			1	(G (S			×		×
Supply Fan VFD Speed		×							×		×
Freezestat			×			N			×	×	×
High Static Shutdown	- 6		×		0	ez i			×	×	×
Return Fan Status	-		×			<u> </u>			×		×
Return Fan VFD Fault			×				13			x	×:
Supply Air Smoke Detector			×			e -			×	×	×
Supply Fan Status			×		ř	(C)			×		×
Supply Fan VFD Fault			×							×	×
Return Fan Start/Stop				×					×		×
Supply Fan Start/Stop	- 0		9	×	83	Ø 0	. 8		×		×
Economizer Mixed Air Temp Setpoint					×				×		×
Preheating Mixed Air Temp Setpoint					х	(C 1)			×		×
Return Airflow Setpoint					x				×		×
Supply Air Static Pressure Setpoint					x				×		×
Supply Air Temp Setpoint	- 13		9.		х	e==:			×		×
High Mixed Air Temp			e e		Ī					×	
High Return Air Temp										×	
High Return Airflow	- 17		·			e = :				x	1
High Supply Air Static Pressure						66 15				×	
High Supply Air Temp										×	
High Supply Air Temp										×	
Low Mixed Air Temp			9		87	% :				×	
Low Return Air Temp			5							×	
Low Return Airflow										×	
Low Supply Air Static Pressure			9.			e -				×	
Low Supply Air Temp					1	10 0				×	
Low Supply Air Temp						Si Si				х	
Prefilter Change Required										×	×
Return Fan Failure			2			62 B	. 8			×	
Return Fan in Hand										x	
Return Fan Runtime Exceeded										×	
Supply Fan Failure			9.			20-2				×	
Supply Fan in Hand					Ŷ	166 15.	100	1		×	









HVAC - CONTROLS

REVISIONS DESCRIPTION

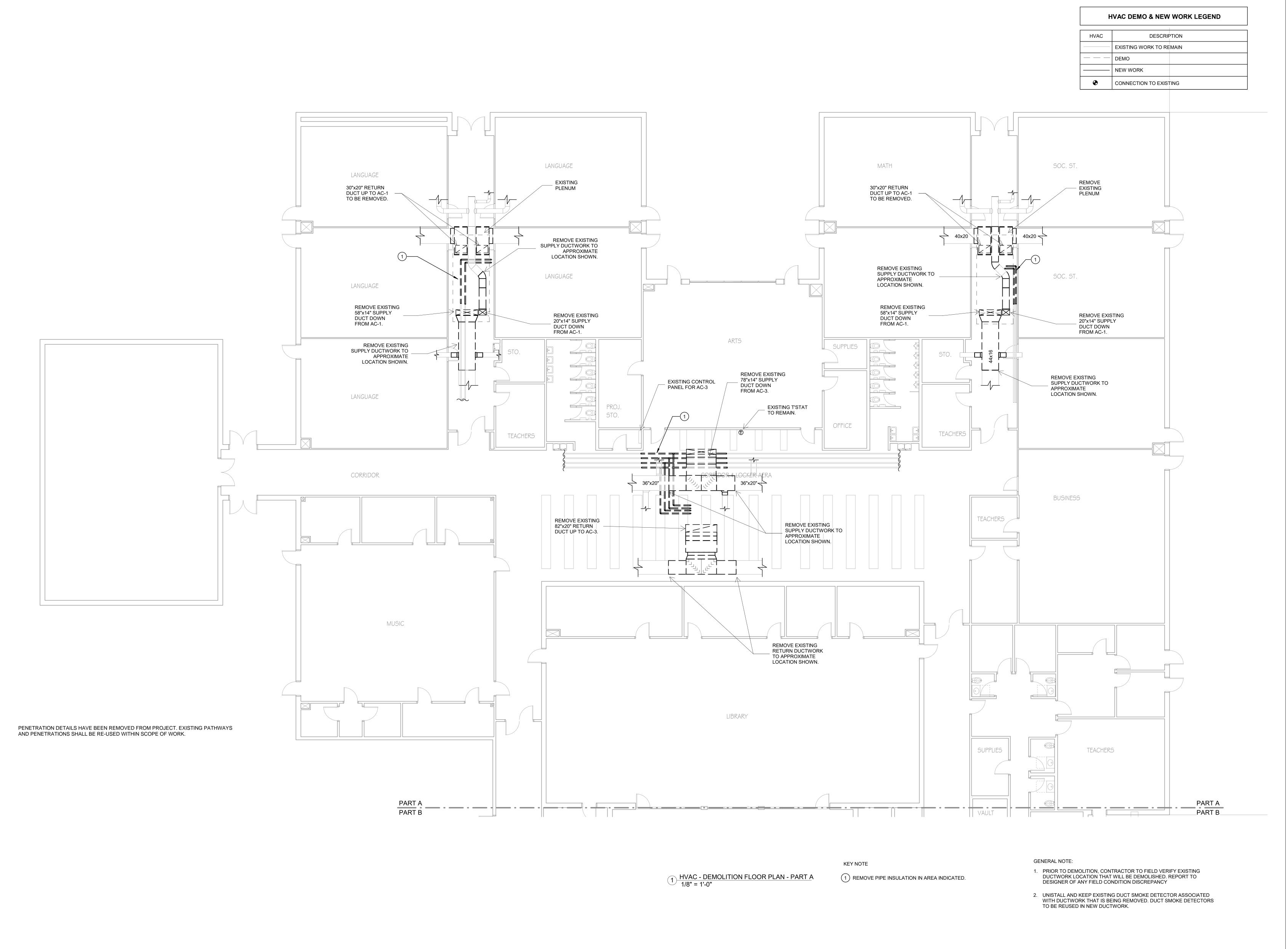
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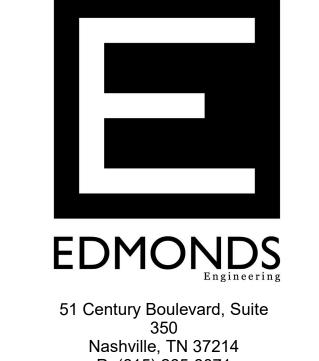
DATE: 11-08-19

PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS

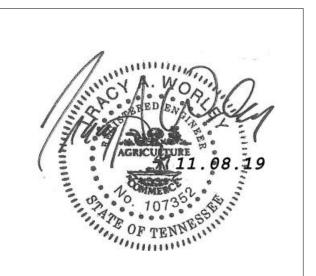
AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

ADD ALTERNATE





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HVAC - DEMOLITION FLOOR PLAN - PART A

REVISIONS

NO DESCRIPTION DATE

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M1.01

HVAC DEMO & NEW WORK LEGEND

HVAC DESCRIPTION

EXISTING WORK TO REMAIN

DEMO

NEW WORK

CONNECTION TO EXISTING

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ACEMENT

HVAC - DEMOLITION FLOOR PLAN - PART B

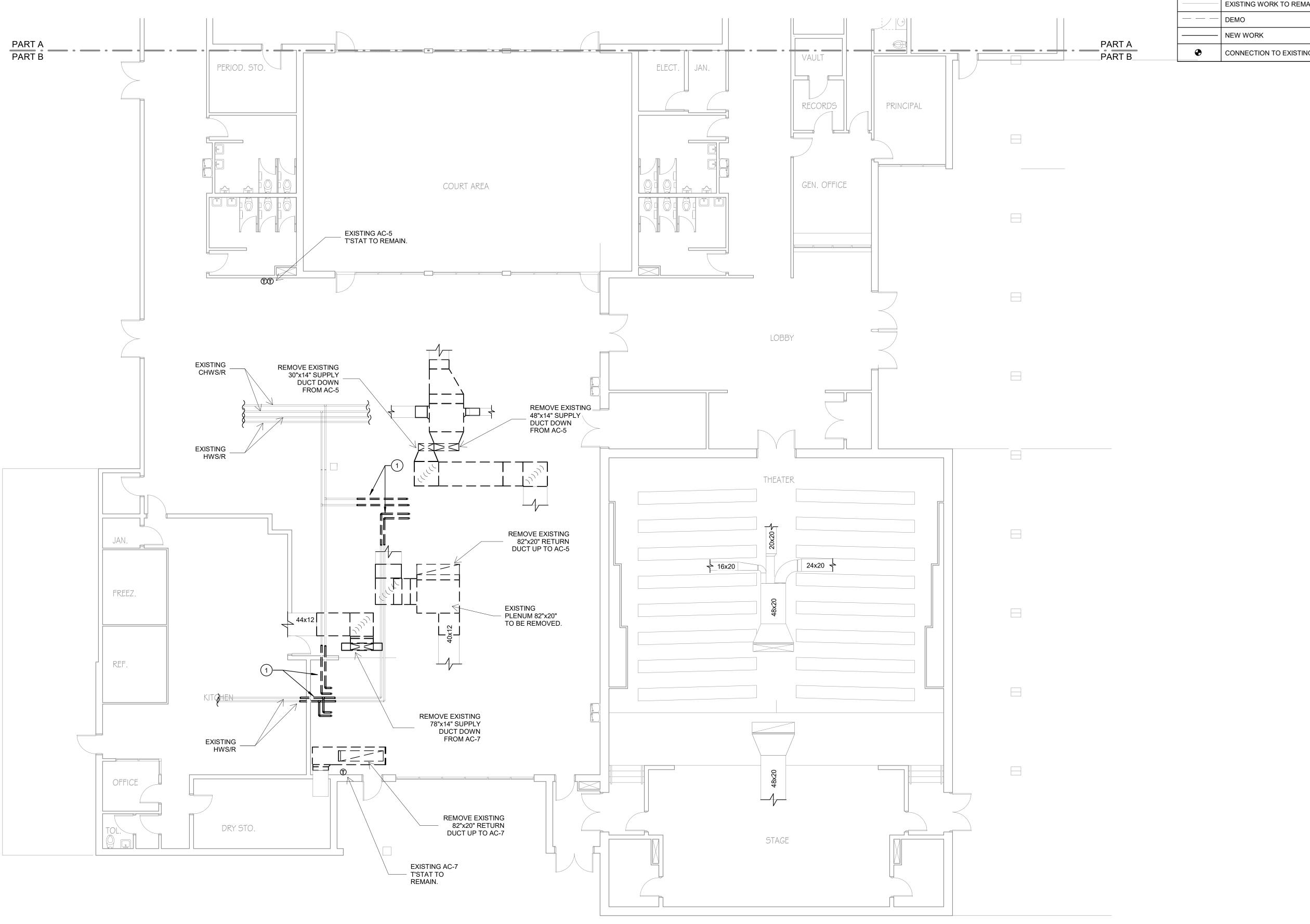
REVISIONS

NO DESCRIPTION DATE

BNA19125

M1.02

DATE: 11-08-19



PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 HVAC - DEMOLITION FLOOR PLAN - PART B 1/8" = 1'-0"

KEY NOTE

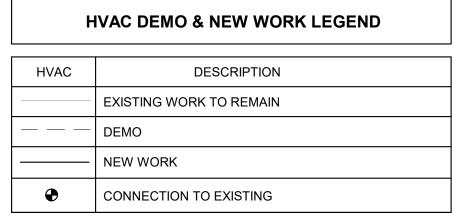
REMOVE PIPE INSULATION IN AREA INDICATED.

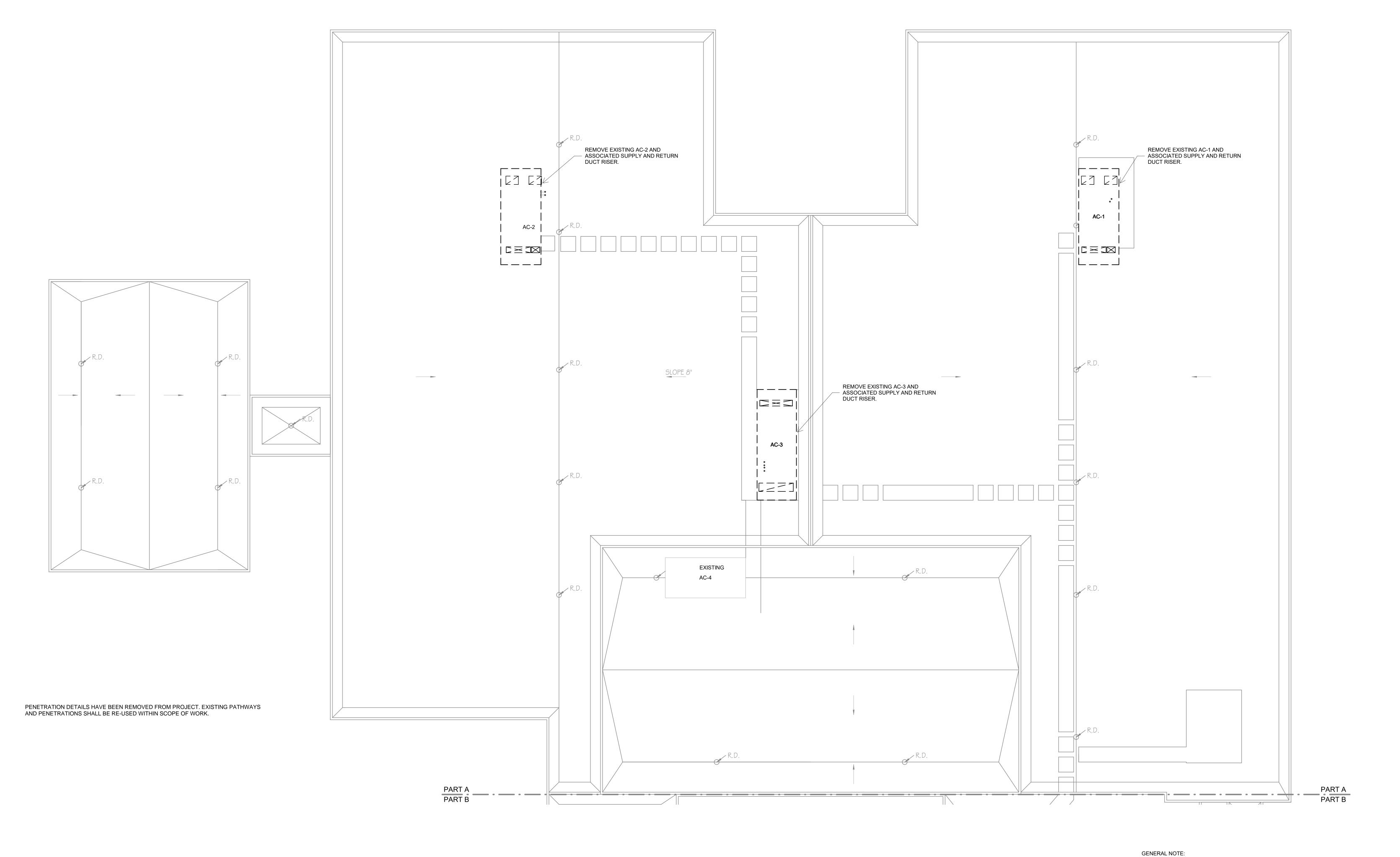
GENERAL NOTE:

 PRIOR TO DEMOLITION, CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK LOCATION THAT WILL BE DEMOLISHED. REPORT TO DESIGNER OF ANY FIELD CONDITION DISCREPANCY

2. UNISTALL AND STORE DUCT SMOKE DETECTOR TO REINSTALL IN NEW DUCTWORK.

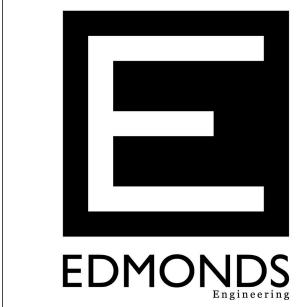
Н	IVAC DEMO & NEW WORK LEGEND
HVAC	DESCRIPTION
	EXISTING WORK TO REMAIN
	DEMO
	NEW WORK
•	CONNECTION TO EXISTING





1 HVAC - DEMOLITION ROOF PLAN - PART A 1/8" = 1'-0"

PRIOR TO DEMOLITION, CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK LOCATION, CHILLED WATER PIPING, AND HOT WATER PIPING THAT WILL BE DEMOLISHED. REPORT TO EOR OF ANY FIELD CONDITION DISCREPANCY



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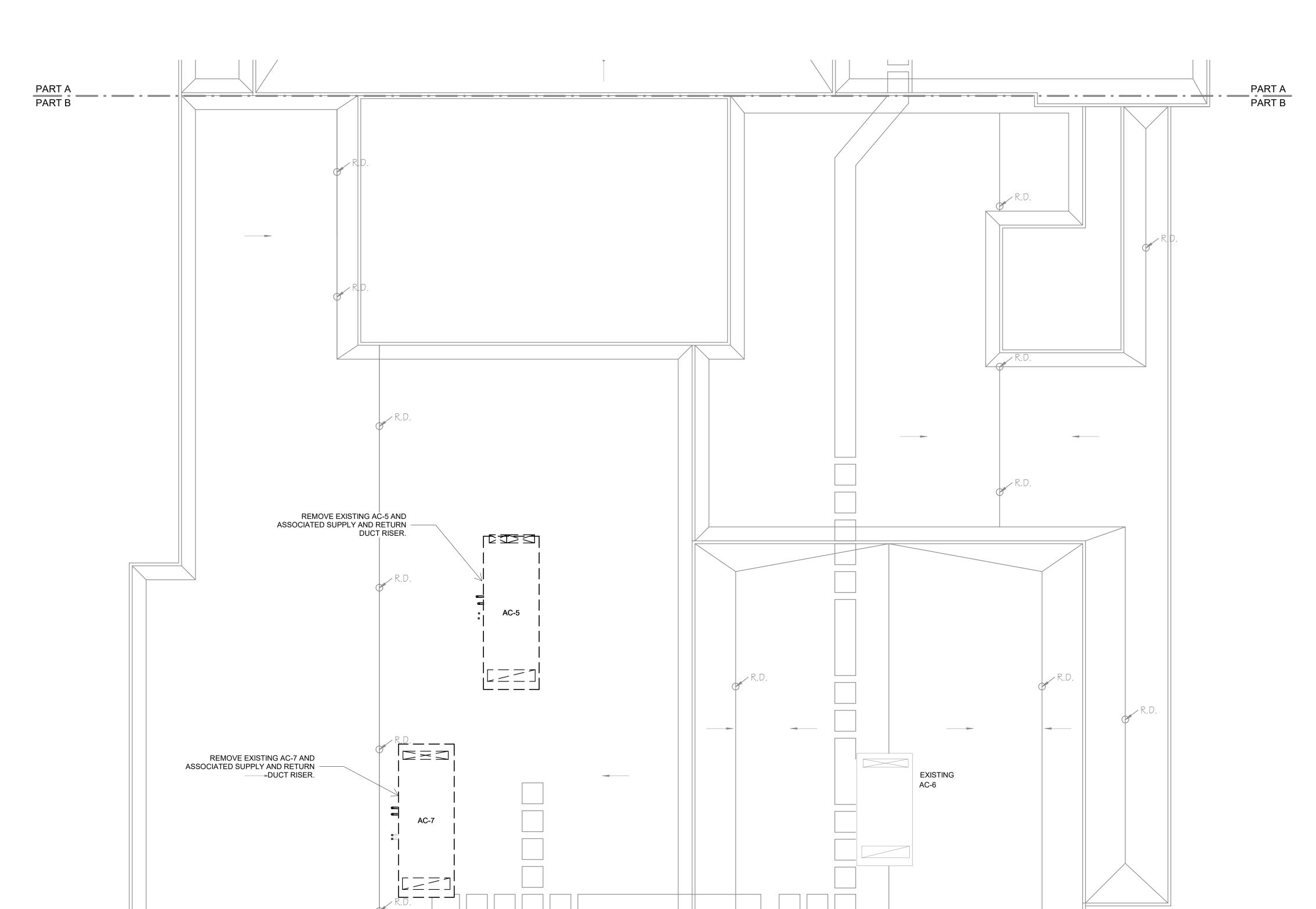


HVAC - DEMOLITION ROOF PLAN - PART A

REVISIONS NO DESCRIPTION DATE

BNA19125

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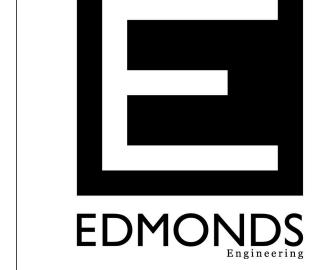
HVAC DEMO & NEW WORK LEGEND

HVAC DESCRIPTION

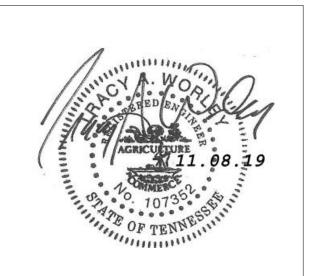
EXISTING WORK TO REMAIN

DEMO
NEW WORK

CONNECTION TO EXISTING



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HVAC - DEMOLITION ROOF PLAN - PART B

REVISIONS

NO DESCRIPTION DATE

BNA19125

M1.12

DATE: 11-08-19

PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 HVAC - DEMOLITION ROOF PLAN - PART B 1/8" = 1'-0"

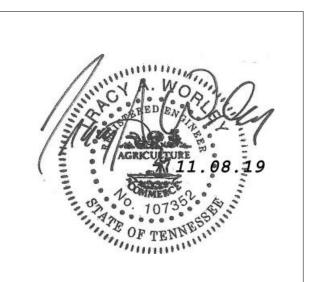
- PRIOR TO DEMOLITION, CONTRACTOR TO FIELD VERIFY EXISTING DUCTWORK LOCATION, CHILLED WATER PIPING, AND HOT WATER PIPING THAT WILL BE DEMOLISHED. REPORT TO EOR OF ANY FIELD CONDITION DISCREPANCY
- 2. CONTRACTOR TO DISCONNECT AND CAP CHW, HW, AND MCD PIPING PRIOR TO DEMOLTION OF RTU.





HVAC DEMO & NEW WORK LEGEND

DESCRIPTION



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HVAC - FLOOR PLAN - PART A

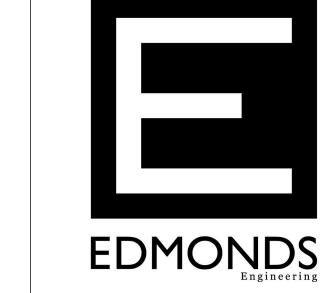
REVISIONS

NO DESCRIPTION DATE

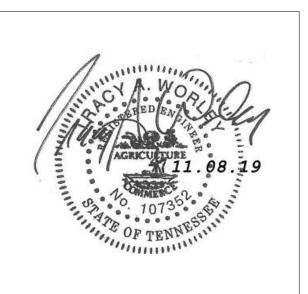
BNA19125

M2.01

HVAC DEMO & NEW WORK LEGEND DESCRIPTION EXISTING WORK TO REMAIN NEW WORK CONNECTION TO EXISTING



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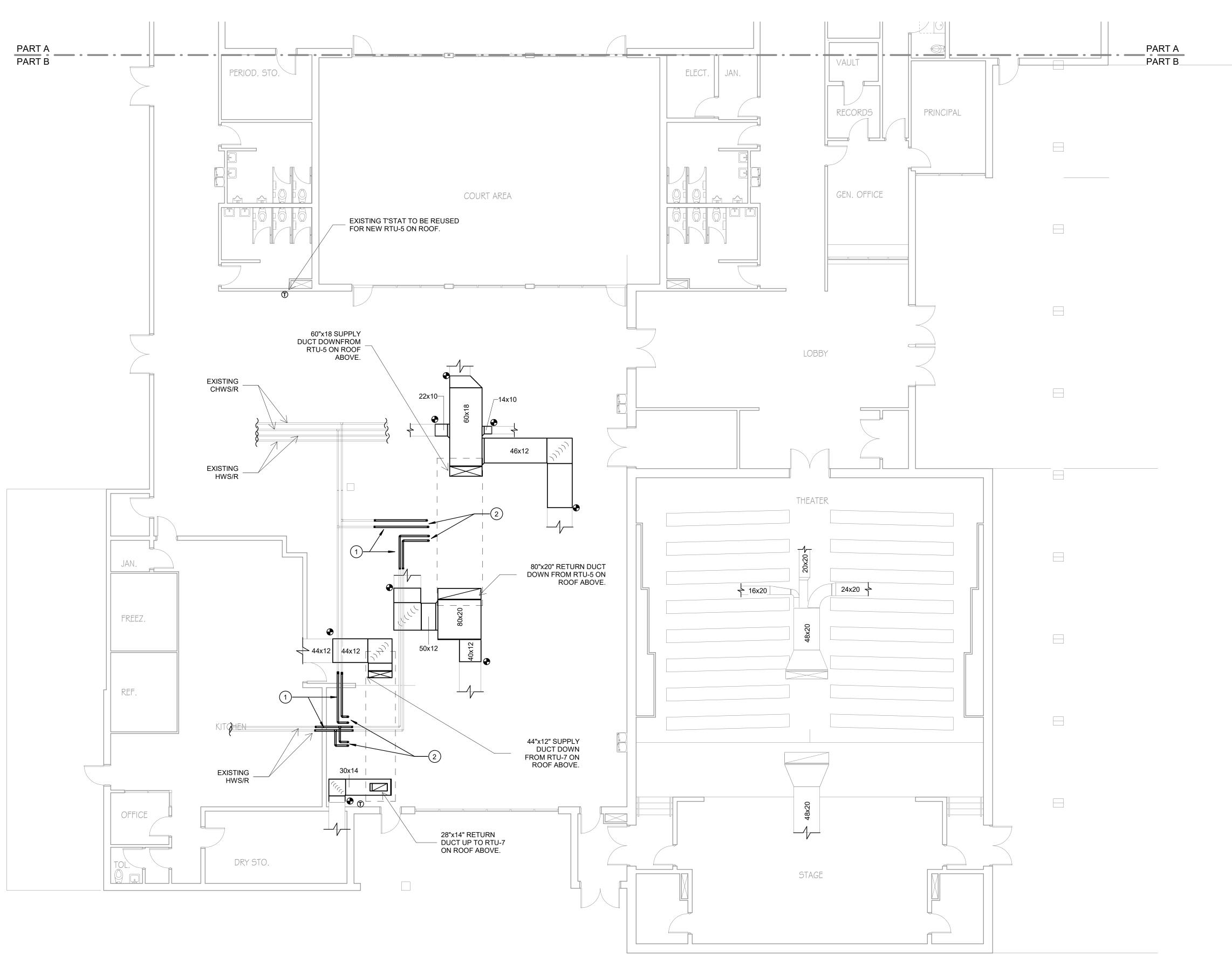
HVAC - FLOOR PLAN - PART B

REVISIONS NO DESCRIPTION DATE

BNA19125

M2.02

DATE: 11-08-19



PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 HVAC - FLOOR PLAN - PART B 1/8" = 1'-0"

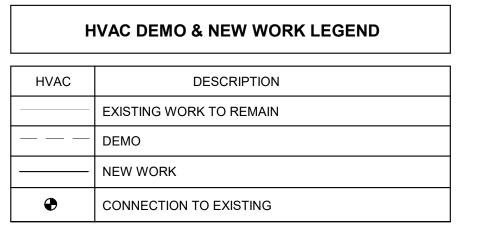
KEY NOTE

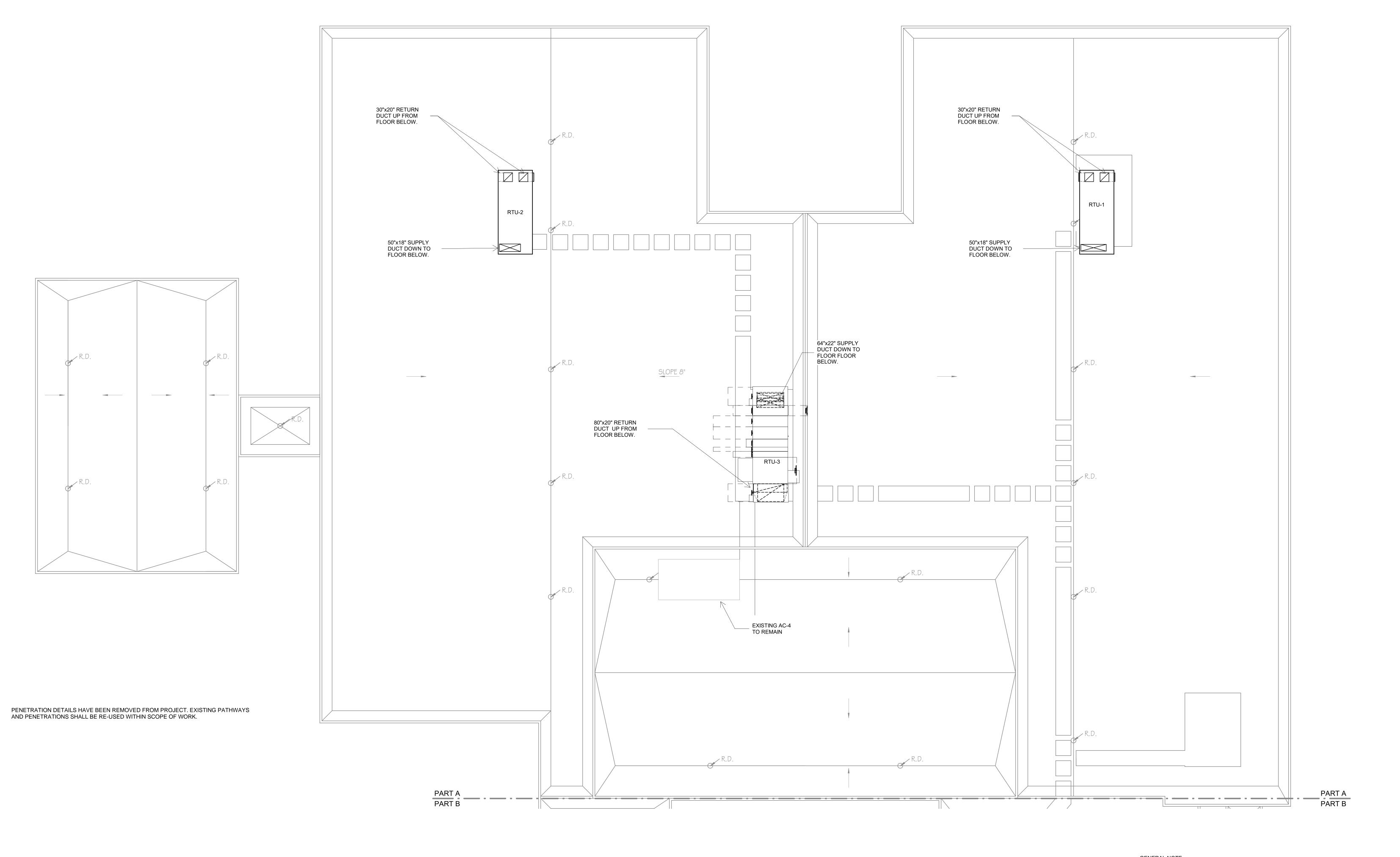
1. REINSTALL EXISTING DUCT SMOKE DETECTOR IN NEW DUCTWORK. 1 PROVIDE NEW INSULATION ON EXISTING PIPING IN AREA INDICATED

GENERAL NOTE:

(2) MODIFY CHWS/R & HWS/R PIPING IN RISER AS REQUIRED TO CONNECT TO NEW UNIT.

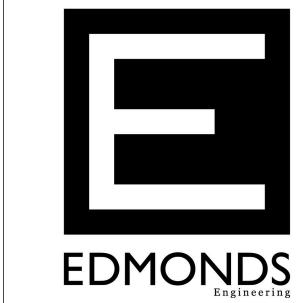
Н	IVAC DEMO & NEW WORK LEGEND
HVAC	DESCRIPTION
	EXISTING WORK TO REMAIN
	DEMO
	NEW WORK
•	CONNECTION TO EXISTING





1 HVAC - ROOF PLAN - PART A 1/8" = 1'-0"

GENERAL NOTE: CONTRACTOR TO CONNECT EXISTING CHW,HW, AND MCD PIPE TO NEW RTU. ROUTE NEW PIPING AS REQUIRED.



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HVAC - ROOF PLAN -PART A

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PART A • •					PART A PART B
PARTB		R.D.		R.D.	PART B
		R.D. 60"x18 SUPPLY DUCT DOWN TO FLOOR BELOW.		R.D.	
		SUPPLY OWN TO BELOW.	R.D.	EXISTING AC-6 TO REMAIN.	. R.D.
	FLOOR	28"x14" RETURN DUCT UP FROM FLOOR BELOW.	R.D.	R.D.	

HVAC DEMO & NEW WORK LEGEND

HVAC DESCRIPTION

EXISTING WORK TO REMAIN

DEMO

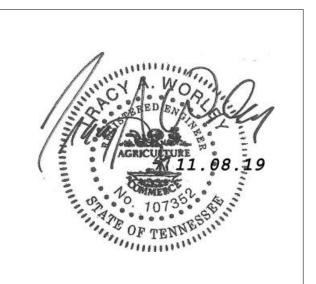
NEW WORK

◆ CONNECTION TO EXISTING

GENERAL NOTE:

 CONTRACTOR TO CONNECT EXISTING CHW,HW, AND MCD PIPE TO NEW RTU. ROUTE NEW PIPING AS REQUIRED. EDMONDS

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HVAC - ROOF PLAN -PART B

REVISIONS

NO DESCRIPTION DATE

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DATE: 11-08-19

○ IIVAC BOO

1 HVAC - ROOF PLAN - PART B 1/8" = 1'-0"

PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

ELECTRICAL NOTES:

- 1. THESE DRAWINGS ARE A PART OF A COMPLETE SET OF ARCHITECTURAL/ENGINEERING CONTRACT DOCUMENTS. ELECTRICAL CONTRACTOR SHOULD REFER TO THE ARCHITECTURAL DRAWINGS FOR ACTUAL LOCATION OF ITEMS WHERE SPECIFIED. SEE SAID CONFIGURATIONS FOR WALL DEFINITIONS, ELEVATIONS, CASEWORK, REFLECTED CEILING PLAN, ETC. ROUGH-IN INSTALLATIONS WHICH ARE NOT LOCATED ACCORDING TO THE ARCHITECTURAL ELEVATIONS SHALL BE RELOCATED AT NO ADDITIONAL COST.
- 2. CEILING CLEARANCES ARE CRITICAL FOR THIS PROJECT. GENERAL CONTRACTOR MUST COORDINATE ALL TRADES TO AVOID POTENTIAL INTERFERENCES. CONFLICTS BETWEEN TRADES SHALL BE REFERRED TO THE ARCHITECT FOR RESOLUTION.
- 3. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE NEC AND LOCAL ORDINANCES. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
- 4. ALL SYMBOLS SHOWN ON THIS LEGEND MAY NOT BE USED.
- 5. ALL BRANCH CIRCUIT CONDUIT SHALL BE GALVANIZED EMT. 3/4" CONDUIT MINIMUM.
- 6. ALL CIRCUITS SHOWN CONCEALED SHALL BE RUN IN FURRED CEILING SPACES AND SHALL BE CONCEALED IN CONCRETE SLAB ONLY WHEN NO FURRED CEILING SPACE IS PROVIDED.
- 7. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION TYPE FITTINGS.
- 8. ALL OUTLET BOXES MOUNTED BACK-TO-BACK IN WALLS SHALL HAVE FIREPROOF SOUND INSULATING MATERIAL INSTALLED BETWEEN THE BOXES TO PREVENT SOUND TRANSMISSION FROM ONE ROOM TO THE OTHER.
- 9. ALL WALL OUTLETS NOT PROVIDED WITH A DEVICE BY THIS CONTRACTOR SHALL BE PROVIDED WITH BLANK WALL PLATES.
- 10. ALL BRANCH CIRCUITS SHALL INCLUDE A GREEN COVERED GROUND WIRE SIZED PER NEC OR AS SHOWN. CONNECT TO EACH DEVICE AND OUTLET BOX ON THE CIRCUIT AND TO THE PANELBOARD

GROUND BUS. MULTIPLE WIRE BRANCH CIRCUITS WITH COMMON NEUTRAL REQUIRE ONLY ONE GROUND WIRE. NUMBER OF WIRES SHOWN ON DRAWINGS DOES NOT INCLUDE GROUND WIRE.

- 11. FINAL EQUIPMENT CONNECTIONS THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR & MATERIALS REQUIRED TO MAKE FINAL CONNECTIONS TO ALL EQUIPMENT FURNISHED BY THIS CONTRACTOR AND/OR EQUIPMENT FURNISHED BY OTHERS. VERIFY ALL REQUIREMENTS, CONDUCTOR SIZE, OVERCURRENT PROTECTION, PHASE, VOLTAGE, MOTOR ROTATION, ETC., WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. PROVIDE FUSED DISCONNECT IF REQUIRED BY MANUFACTURER.
- 12. FURNISH & INSTALL DEVICES TO CONNECT TO EXISTING FIRE ALARM SYSTEM WHICH CONFORMS TO ALL NATIONAL, STATE, & LOCAL CODES. PROVIDE ADDITIONAL DEVICES AS REQUIRED. PROVIDE TO ARCHITECT A COMPLETE SET OF MANUFACTURER'S SYSTEM INSTALLATION PLANS INCLUDING RISER DIAGRAM, CONDUIT & WIRING, INTERCONNECTION DIAGRAMS, DEVICE LOCATIONS AND ALL REQUIRED CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS. PROVIDE CONDUIT & WIRING AS DIRECTED BY SYSTEM SUPPLIER. FIRE ALARM CONTRACTOR TO HOLD A CURRENT LICENSE TO CONDUCT BUSINESS ISSUED BY THE STATE FIRE MARSHAL'S OFFICE.
- 13. NEW FIRE ALARM DEVICES SHALL BE INTERFACED WITH EXISTING FIRE ALARM SYSTEM SERVING BUILDING, LOCATED IN ADMINISTRATIVE AREA. RE-PROGRAM AND TEST SYSTEM AFTER DEVICES HAVE BEEN INSTALLED. ROUTE NEW WIRING FROM NEW DEVICE TO EXISTING FIRE ALARM CIRCUIT. CONTRACTOR SHALL PROVIDE ALL NECESSARY COMPONENTS TO PROVIDE A FULLY FUNCTIONAL
- 14. CONTRACTOR SHALL PROVIDE A COMPLETE SITE INVESTIGATION TO VERIFY EXISTING CONDITIONS PRIOR TO BID.

GENERAL NOTES:

- A. UNLESS OTHERWISE NOTED, 20A/1P BREAKERS SHALL UTILIZE #12 AWG CONDUCTORS. EXCEPTION: WHERE BRANCH CIRCUIT IS IN EXCESS OF 90 LINEAR FEET, CONDUCTORS SHALL BE #10 AWG, WHERE BRANCH CIRCUIT IS IN EXCESS OF 175 LINEAR FEET, CONDUCTORS SHALL BE #8 AWG, AND WHERE BRANCH CIRCUIT IS IN EXCESS OF 260 LINEAR FEET, CONDUCTORS SHALL BE #6 AWG.
- B. DEVICES INDICATED ON THIS DRAWING ARE DIAGRAMMATICAL ONLY. CONTRACTOR SHALL REFER TO ARCHITECTURAL AND INTERIOR DESIGNER'S ELEVATIONS FOR LOCATIONS OF OUTLETS, FIRE ALARM DEVICES, ETC, PRIOR TO ROUGH-IN.
- C. REFERENCE MECHANICAL DRAWINGS FOR EXACT LOCATIONS AND QUANTITIES OF DUCT SMOKE DETECTORS, FIRE/SMOKE DAMPERS AND SMOKE CONTROL DAMPERS.
- D. COMMUNICATIONS/SYSTEMS CONDUITS 2" DIAMETER AND LARGER SHALL HAVE A BEND RADIUS OF NO LESS THAN 10 TIMES THE CONDUIT DIAMETER.
- E. MULTIWIRE BRANCH CIRCUITS SHALL BE INSTALLED PER NEC 210.4 UNLESS OTHERWISE NOTED.
- F. BRANCH CIRCUIT CONDUCTORS SIZED TO PREVENT VOLTAGE DROP MAY BE REDUCED IN SIZE AS LOAD SUPPLIED BY REMAINING CIRCUIT DECREASES. VOLTAGE DROP SHALL NOT EXCEED FIVE PERCENT AT THE FARTHEST BRANCH
- G. REFERENCE MECHANICAL DRAWINGS FOR MECHANICAL CONTROLS INTERFACE/REQUIREMENTS.

DEMOLITION NOTES:

- 1. IN AREA SHOWN, ALL ELECTRICAL EQUIPMENT, CONDUIT, WIRING, DEVICES. FIXTURES, ETC., REQUIRED TO BE REMOVED TO ALLOW FOR NEW CONSTRUCTION, ABANDONED AS A RESULT OF NEW CONSTRUCTION, OR CURRENTLY NOT IN SERVICE SHALL BE REMOVED AS PART OF THIS CONTRACT.
- 2. EXPOSED CONDUITS AND CONDUITS IN ACCESSIBLE AREAS SHALL BE REMOVED COMPLETELY; CONDUITS CONCEALED IN FLOORS, WALLS AND ABOVE NON-ACCESSIBLE CEILINGS MAY BE CAPPED AND ABANDONED AFTER REMOVAL OF ALL CONDUCTORS; CONDUIT FEEDING EQUIPMENT FROM ABOVE DROPPED CEILING TO BE DISCONNECTED AND REMOVED BACK TO SOURCE. DAMAGE TO CEILINGS TO BE REPLACED OR REPAIRED TO MATCH EXISTING; CONTRACTOR TO MAINTAIN THE INTEGRITY OF ALL EXISTING FEED-THROUGH CIRCUITRY WHERE EXISTING ELECTRICAL EQUIPMENT HAS BEEN REMOVED FROM MIDPOINT OF CIRCUIT. NEW WIRE TO BE PULLED THE ENTIRETY OF
- 3. EXISTING ELECTRICAL EQUIPMENT AND CIRCUITRY NOT BEING REMOVED OR REWORKED UNDER THIS CONTRACT, BUT LOCATED SO AS TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT, SHALL REMAIN IN SERVICE. SUCH CIRCUITS, EQUIPMENT, ETC., SHALL BE EXTENDED. RELOCATED OR REMOVED AND REINSTALLED AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION.
- 4. REMOVE ALL EXISTING CIRCUITS SERVING EQUIPMENT SHOWN TO BE REMOVED UNDER THIS CONTRACT. CIRCUIT BREAKERS IN EXISTING PANELBOARDS ABANDONED AS A RESULT OF DEMOLITION SHALL BE REUSED WHERE AVAILABLE, AND SIZED AS SHOWN ON NEW WORK PLANS, TO SERVE NEW EQUIPMENT.
- 5. EXISTING FLOOR OUTLETS FOUND TO NOT BE LOCATED TO COORDINATE WITH NEW FURNITURE AND/OR PARTITION LAYOUTS SHALL BE REMOVED COMPLETELY OR REMOVED AND REINSTALLED IN NEW LOCATIONS AS DIRECTED BY THE ARCHITECT/ENGINEER. ALL FLOOR PENETRATIONS SHALL BE SEALED TO MAINTAIN FIRE RATING OF THE FLOOR AND TO ENSURE
- 6. EXISTING CIRCUIT BREAKERS FEEDING EXISTING LIGHTING, RECEPTACLES, OR EQUIPMENT, WHERE ENTIRE CIRCUIT HAS BEEN REMOVED, TO BE LABELED "SPARE". REUSE "SPARE" CIRCUIT BREAKERS WHERE NOTED ON DRAWINGS.
- 7. ALL EXISTING LIGHTING FIXTURES, RECEPTACLES, SWITCHES, ETC., BEING REMOVED AND NOT BEING RELOCATED, TO BE CLEANED AND TURNED OVER TO THE OWNER'S REPRESENTATIVE
- 8. CONTRACTOR TO MAINTAIN THE INTEGRITY OF ALL EXISTING CIRCUITRY TO
- 9. ALL ELECTRICAL EQUIPMENT SHOWN IS FROM ORIGINAL CONTRACT DOCUMENTS AND IS TO BE USED AS GUIDE FOR POSSIBLE EQUIPMENT LOCATIONS. CONTRACTOR TO FIELD VERIFY FOR EXACT LOCATIONS AND
- 10. ALL EXISTING WALLS, CEILINGS, FLOOR SLABS, ETC., BEING CUT OR DAMAGED UNDER THIS CONTRACT TO BE PATCHED BACK TO MATCH EXISTING FINISH AND FIRE PROTECTION RATING.

CFCI CONTRACTOR FURNISHED

CFOI CONTRACTOR FURNISHED

OWNER INSTALLED

OWNER INSTALLED

CONTRACTOR INSTALLED

PVC POLYVINYL CHLORIDE RACEWAY

RGS RIGID GALVANIZED STEEL

UON UNLESS OTHERWISE NOTED

WP WEATHERPROOF, NEMA 3R.

OFOI OWNER FURNISHED

OFCI OWNER FURNISHED

OC ON CENTER

PH PHASES

POLES

WIRES

W

PF POWER FACTOR

CONTRACTOR INSTALLED

ARREVIATIONS

ADDK	EVIATIONS
Α	AMPERES
AA	AMBIENT AIR COOLED
AIC	AMPERES INTERUPTING CAPACITY
AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
С	CONDUIT RACEWAY

STRUCTURAL INTEGRITY.

- CKTS CIRCUITS CTTS CLOSED TRANSITION TRANSFER SWITCH DIA DIAMETER EC ELECTRICAL CONTRACTOR
- EM EMERGENCY EP EXPLOSION PROOF FA FORCED AIR COOLED FMC FLEXIBLE METAL CONDUIT GROUND MOUNTING HEIGHT TO CENTERLINE HID HIGH INTENSITY DISCHARGE
- HP HORSE POWER IG ISOLATED GROUND KVA KILOVOLT-AMPERES KW KILOWATT
- LT LIQUID TIGHT FLEXIBLE METAL CONDUIT KCMIL THOUSAND CIRCULAR MILS MV MEDIUM VOLTAGE
- NEUTRAL NEC NATIONAL ELECTRICAL CODE NIC NOT IN CONTRACT

NL NIGHT LIGHT

RECEPTACLES

WALL MOUNTED DUPLEX RECEPTACLE - NEMA 5-20R

CONTROLLED DUPLEX RECEPTACLE - NEMA 5-20R

GROUND FAULT RECEPTACLE - NEMA 5-20R GF RECEPTACLE - MTD ABOVE COUNTER - NEMA 5-20R

ISOLATED GROUND RECEPTACLE - NEMA 5-20R IG SIMPLEX RECEPTACLE

SPLIT WIRED RECEPTACLE (HALF CONTROLLED) - NEMA 5-20R WEATHER PROOF RECEPTACLE - NEMA 5-20R GFCI W/ WET LOCATION COVER

QUADRUPLEX RECEPTACLE - MTD ABOVE COUNTER - NEMA 5-20R

DUPLEX RECEPTACLE - NEMA 5-20R WITH TWO FULL OUTPUT USB PORTS SINGLE RECEPTACLE - ELECTRIC WATER COOLER, GFCI.

QUADRUPLEX RECEPTACLE - NEMA 5-20R

CEILING MOUNTED

DUPLEX RECEPTACLE

POWER

GENERATOR ALARM / ANNUNCIATOR PANEL MAGNETIC MOTOR STARTER

COMBINATION MAGNETIC STARTER & DISCONNECT SWITCH

RELAY ELECTRIC MOTOR

DISCONNECT SWITCH, UNFUSED, 30A, 3P UNLESS OTHERWISE NOTED. DISCONNECT SWITCH, FUSED, 30A, 3P UNLESS OTHERWISE NOTED.

TIME CLOCK SWITCH VARIABLE SPEED / VARIABLE FREQUENCY DRIVE

CONTACTOR CIRCUIT BREAKER, INDIVIDUALLY ENCLOSED

CONTROL PANEL

AUTOMATIC TRANSFER SWITCH MANUAL TRANSFER SWITCH

METER (WITH SOCKET ASSSEMBLY)

TRANSFORMER, GENERAL PURPOSE DRY-TYPE, REFER TO SCHEDULE

JUNCTION & OUTLET BOXES

HARDWIRE CONNECTION. JUNCTION BOX - CEILING MOUNTED JUNCTION BOX - FLOOR MOUNTED

JUNCTION BOX - WALL MOUNTED

FIRE ALARM DOOR HOLDER FIRE ALARM HORN - STROBE FIRE ALARM PULL BOX

FIRE ALARM SPEAKER - CEILING

FIRE ALARM STROBE

REMOTE MIC FOR EVACUATION

REMOTE TEST SWITCH

CONTROL PANEL - BASIC SHAPE CONTROL PANEL FOR HVAC EQUIPMENT

FIRE ALARM ANNUNCIATOR FIRE ALARM COMMUNICATOR

FIRE ALARM CONTROL PANEL SURFACE OR FLUSH MOUNTED. (AS SHOWN ON PLANS).

FIRE ALARM NAC FIRE ALARM TERMINAL CABINET

FIRE ALARM TRANSPONDER SPRINKLER ALARM PANEL

VOICE EVACUATION PANEL

BRANCH CIRCUITS

CONCEALED IN CEILING, WALL, OR IN CEILING SLAB.

CONCEALED IN OR BELOW FLOOR OR UNDERGROUND.

CONDUIT SEAL FITTING: CROUSE-HINDS #EYS OR APPROVED EQUIVALENT.

HOMERUN TO PANELBOARD AND 20A, 1P BREAKER, UON. NOTE: SHOWN 2#12 AND 1#12(G)-1/2"C, 3#12 AND 1#12(G)-3/4"C

-----/// 4#12 AND 1#12(G)-3/4"C SIZE CONDUIT PER NEC FOR GREATER NUMBER OF

CONDUCTORS OR AS NOTED. THE NUMBER IN THE CIRCUIT INDICATES AWG WIRE SIZE AND HASHMARKS INDICATE NUMBER OF WIRES REQUIRED. GROUND WIRE SHALL BE SIZED IN ACCORDANCE WITH NEC TABLE 250-95. NUMBER OF HASHMARKS DO NOT INCLUDE GROUND WIRE.

- RISER: UP, RUNNING TO SOURCE.
- RISER: DOWN, RUNNING TO SOURCE.

BRANCH CIRCUIT WIRING FOR LIGHTING IS SHOWN SCHEMATICALLY. EACH LUMINAIRE IS TO BE INSTALLED WITH AN INDIVIDUAL FLEXIBLE CONNECTION. FOR EXAMPLE:

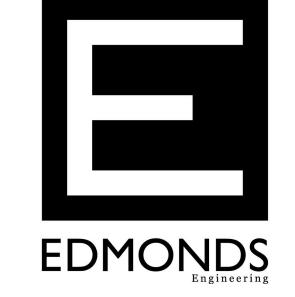
REQUIRED INSTALLATION SCHEMATIC

DRAWING CONVENTIONS

— NEW WORK ---- () EXISTING TO REMAIN \times \times \times \times EXISTING TO REMOVE

PANELBOARDS

SURFACE MOUNTED PANELBOARD RECESSED MOUNTED PANELBOARD



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ELECTRICAL -LEGEND

DESCRIPTION

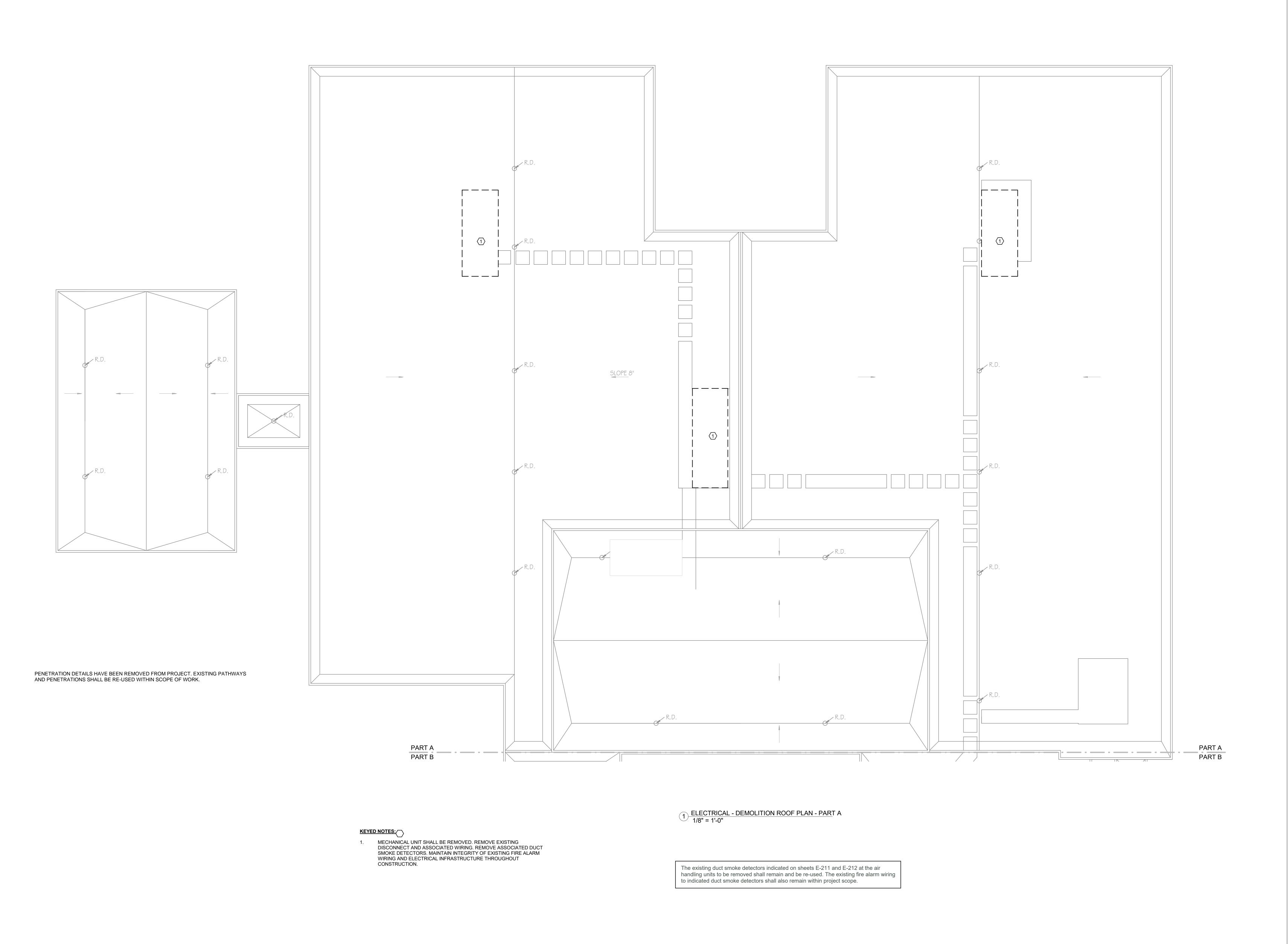
REVISIONS

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E0.01

DATE: 11-08-19

PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.



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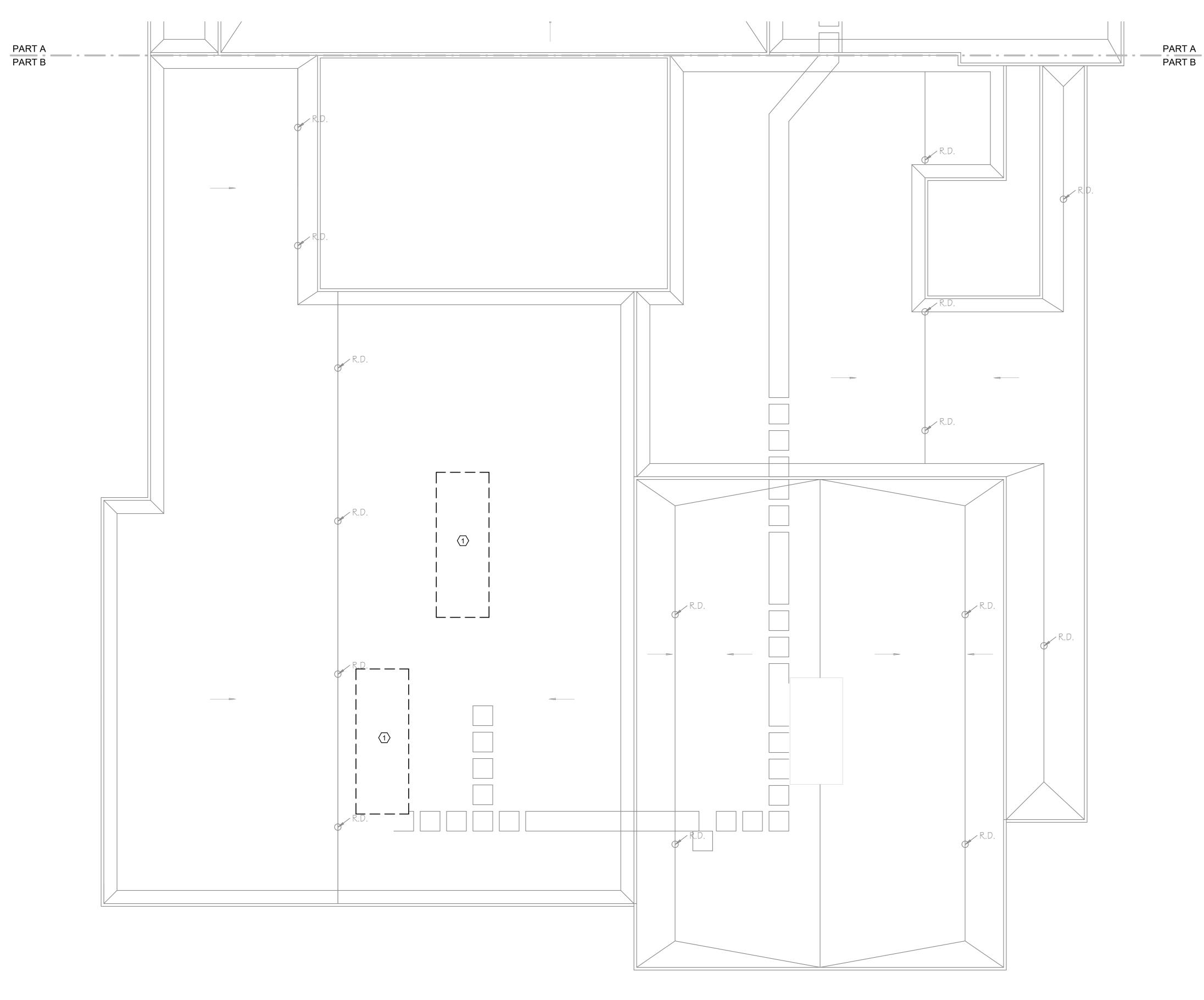
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ELECTRICAL -DEMOLITION ROOF PLAN - PART A

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PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 ELECTRICAL - DEMOLITION ROOF PLAN - PART B 1/8" = 1'-0"

KEYED NOTES:

1. MECHANICAL UNIT SHALL BE REMOVED. REMOVE EXISTING DISCONNECT AND ASSOCIATED WIRING. REMOVE ASSOCIATED DUCT SMOKE DETECTORS. MAINTAIN INTEGRITY OF EXISTING FIRE ALARM WIRING AND ELECTRICAL INFRASTRUCTURE THROUGHOUT CONSTRUCTION.

The existing duct smoke detectors indicated on sheets E-211 and E-212 at the air handling units to be removed shall remain and be re-used. The existing fire alarm wiring to indicated duct smoke detectors shall also remain within project scope.





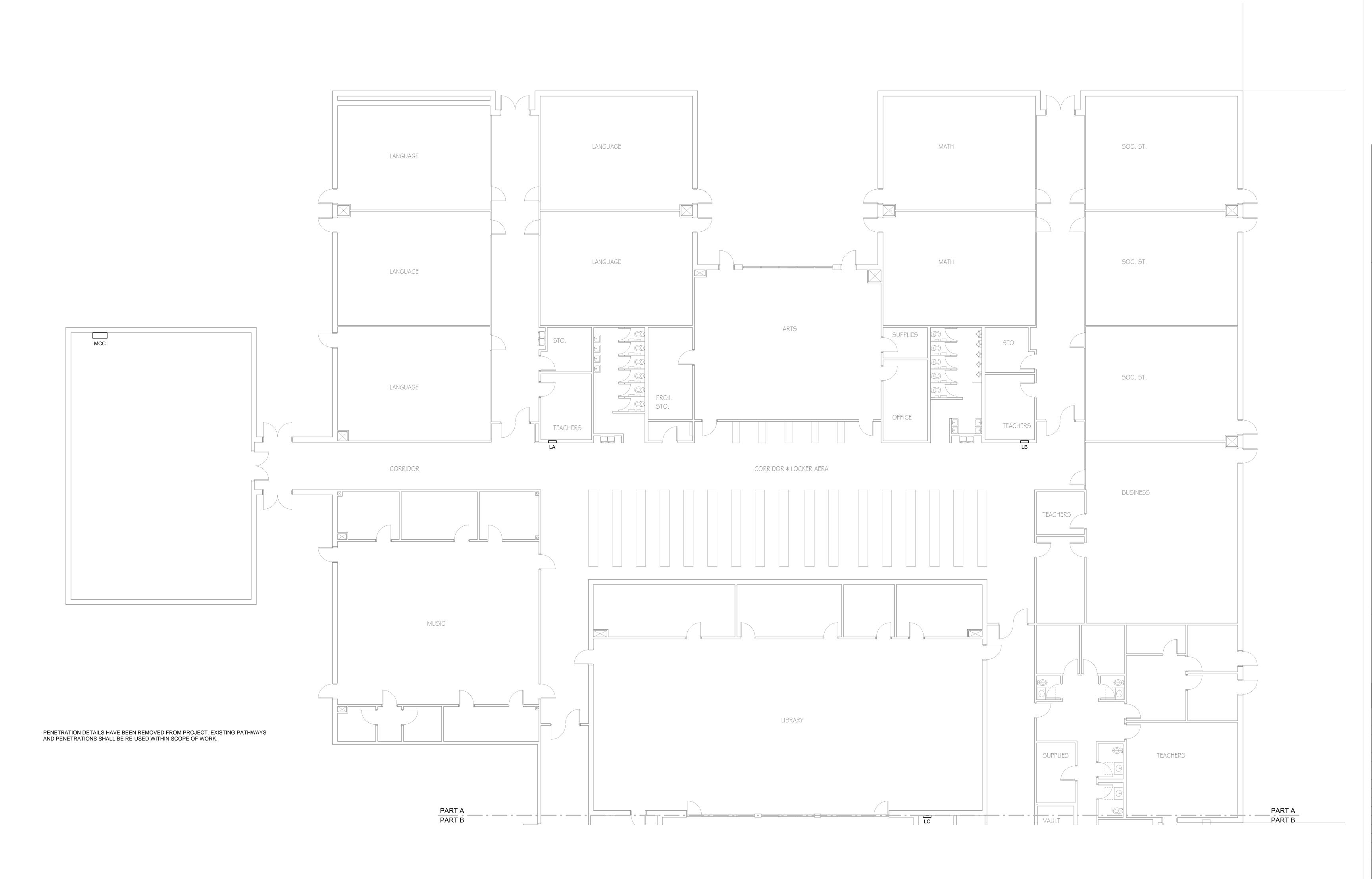
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ELECTRICAL -DEMOLITION ROOF PLAN - PART B

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NO	DESCRIPTION	DAT

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E1.12



1 ELECTRICAL - FLOOR PLAN - PART A 1/8" = 1'-0"

GENERAL NOTES:

- A. UPDATE PANELBOARD DIRECTORIES AS REQUIRED PER NEC 408.
- B. FULLY COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR
- D. ALL NEW BREAKERS PROVIDED SHALL BE AS RECOMMENDED BY EXISTING ELECTRICAL EQUIPMENT MANUFACTURER. BREAKERS SHALL MATCH EQUIPMENT AIC RATING.
- E. EXISTING EXISTING EQUIPMENT INDICATED SHALL REMAIN AND SHALL





UILDING CEMENT St,

ELECTRICAL - FLOOR PLAN - PART A

REVISIONS NO DESCRIPTION DATE

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DATE: 11-08-19

PRIOR TO INSTALLATION.

C. CONTRACTOR TO PERFORM A COMPLETE SITE INVESTIGATION TO VERIFY EXISTING CONDITIONS PRIOR RO BID.

BE USED FOR REFERENCE ONLY.



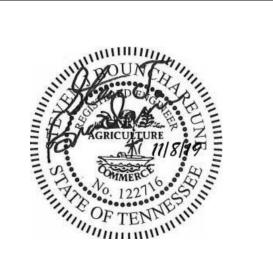
PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 ELECTRICAL - FLOOR PLAN - PART B 1/8" = 1'-0"

GENERAL NOTES:

- A. UPDATE PANELBOARD DIRECTORIES AS REQUIRED PER NEC 408.
- B. FULLY COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- C. CONTRACTOR TO PERFORM A COMPLETE SITE INVESTIGATION TO VERIFY EXISTING CONDITIONS PRIOR RO BID.
- D. ALL NEW BREAKERS PROVIDED SHALL BE AS RECOMMENDED BY EXISTING ELECTRICAL EQUIPMENT MANUFACTURER. BREAKERS SHALL MATCH EQUIPMENT AIC RATING.
- E. EXISTING EXISTING EQUIPMENT INDICATED SHALL REMAIN AND SHALL BE USED FOR REFERENCE ONLY.





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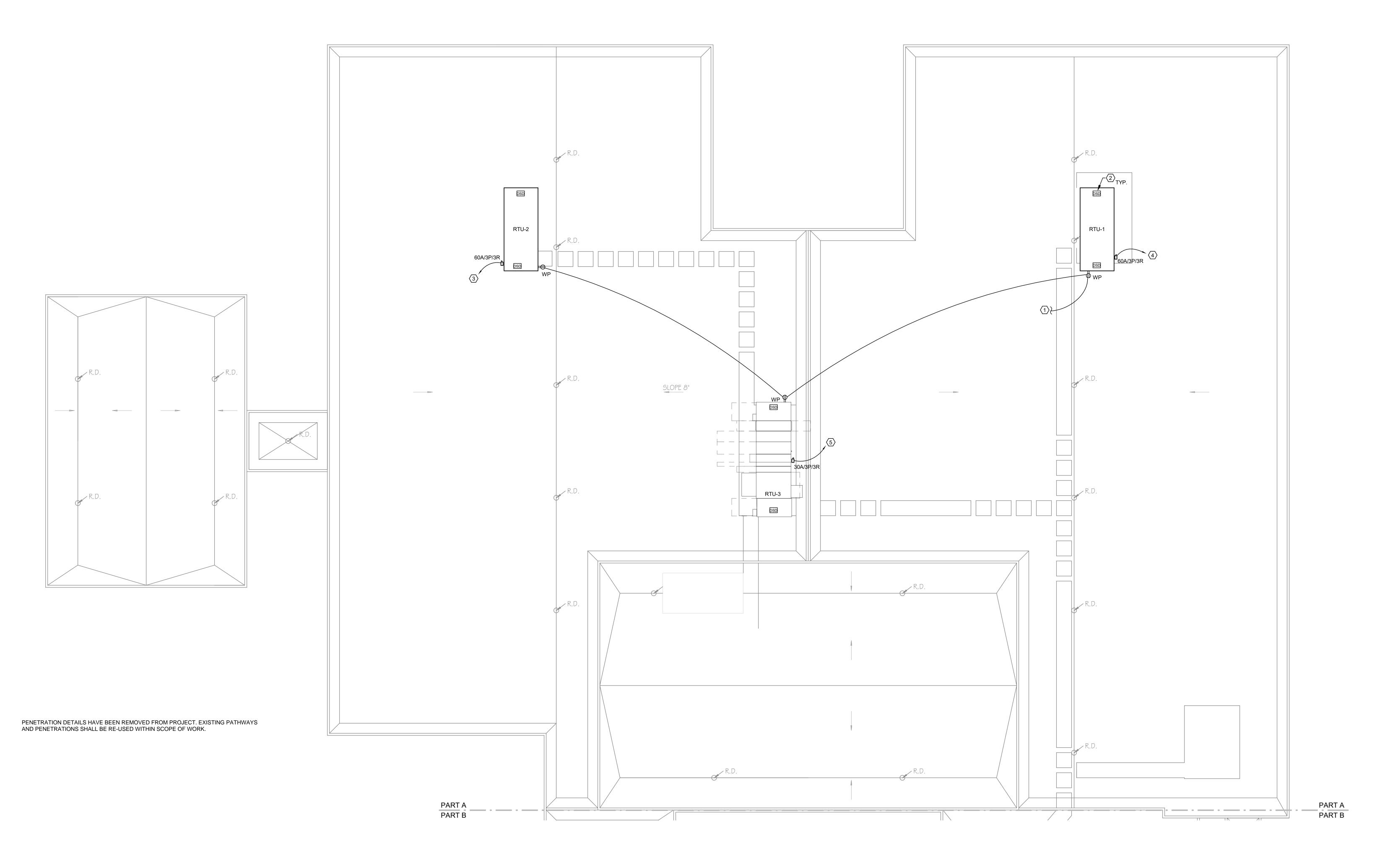
ELECTRICAL - FLOOR PLAN - PART B

REVISIONS

NO DESCRIPTION DATE

BNA19125

E2.02



GENERAL NOTES:

A. UPDATE PANELBOARD DIRECTORIES AS REQUIRED PER NEC 408.

B. FULLY COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.

C. CONTRACTOR TO PERFORM A COMPLETE SITE INVESTIGATION TO VERIFY EXISTING CONDITIONS PRIOR RO BID.

D. BREAKER SIZES INDICATED FOR MECHANICAL EQUIPMENT ARE PER EXISTING DOCUMENTS. IF EXISTING BREAKERS FOR RE-USE DO NOT EXIST, PROVIDE NEW BREAKERS.

E. ALL NEW BREAKERS PROVIDED SHALL BE AS RECOMMENDED BY EXISTING ELECTRICAL EQUIPMENT MANUFACTURER. BREAKERS SHALL MATCH EQUIPMENT AIC RATING.

KEYED NOTES:

 CONNECT TO EXISTING CONVENIENCE OUTLET CIRCUIT ON ROOF IN THIS AREA. IF CIRCUIT IS GREATER THAN 50'-0" AWAY, PROVIDE A NEW 20A/1P BREAKER IN PANELBOARD 'LC'.

2. INTERFACE NEW DUCT SMOKE DETECTORS WITH EXISTING FIRE ALARM SYSTEM SERVING BUILDING. RE-TEST AND TROUBLESHOOT FIRE ALARM SYSTEM FOR FUNCTIONALITY AFTER INSTALLATION.

3. PROVIDE 3#6, #10G, IN 1"C. TO A NEW 50A/3P BREAKER IN EXISTING PANELBOARD 'HC'. REMOVE EXISTING 70A/3P BREAKER AS REQUIRED FOR NEW BREAKER. ROUTE TO NEW VFD SERVING UNIT.

PROVIDE 3#6, #10G, IN 1"C. TO A NEW 50A/3P SWITCH IN EXISTING MOTOR CONTROL CENTER 'MCC'. REMOVE EXISTING 70A/3P SWITCH/ STARTER AS REQUIRED FOR NEW SWITCH. ROUTE TO NEW VFD SERVING UNIT.

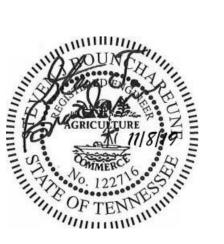
PROVIDE 3#10, #10G, IN 1"C. TO A NEW 30A/3P BREAKER IN EXISTING PANELBOARD 'HC'. REMOVE EXISTING 40A/3P BREAKER AS REQUIRED FOR NEW BREAKER. ROUTE TO NEW VFD SERVING UNIT.

1) POWER - ROOF PLAN - PART A 1/8" = 1'-0"

The existing duct smoke detectors indicated on sheets E-211 and E-212 at the air handling units to be removed shall remain and be re-used. The existing fire alarm wiring to indicated duct smoke detectors shall also remain within project scope.

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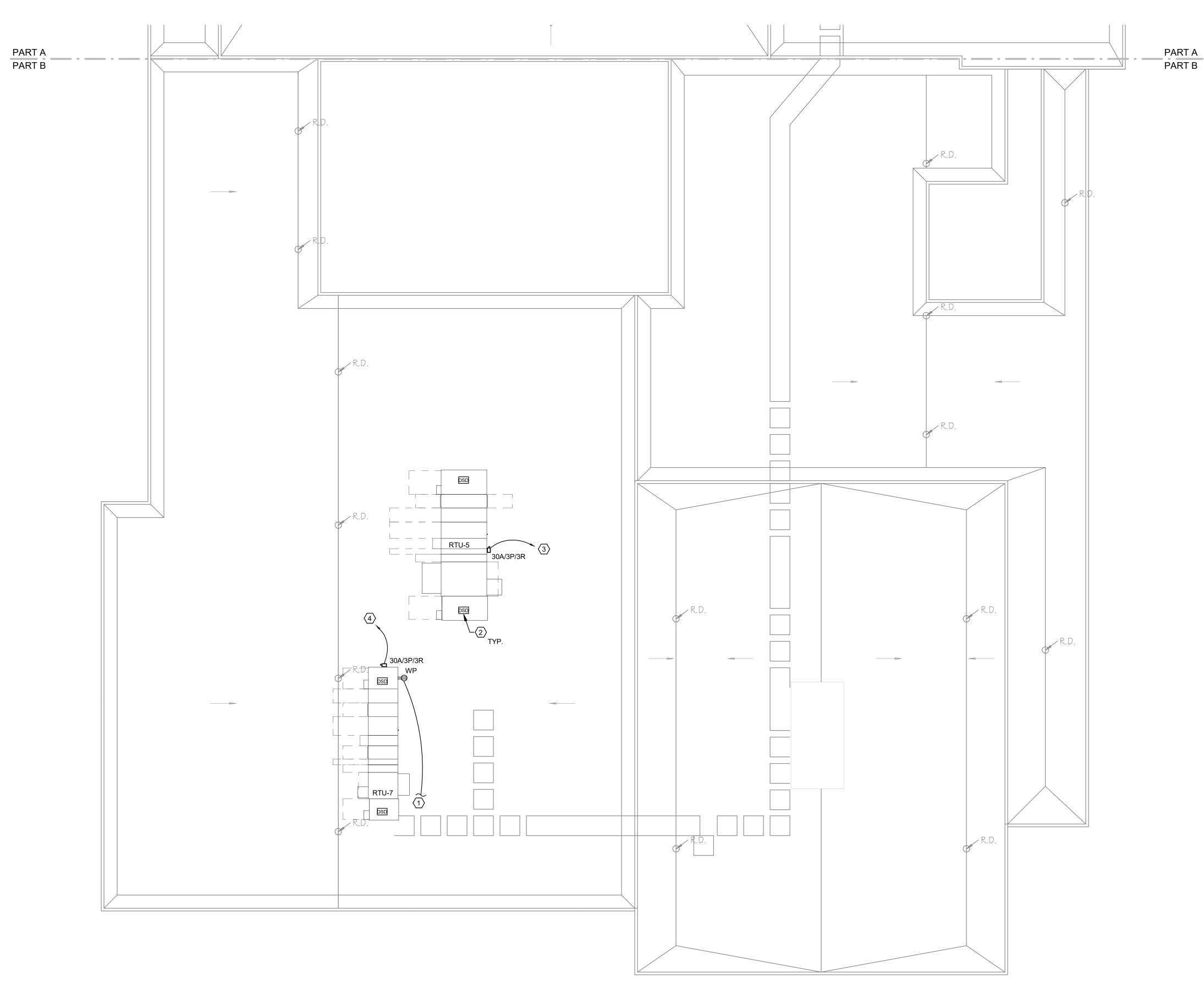
ELECTRICAL - ROOF PLAN - PART A

REVISIONS

NO DESCRIPTION DATE

BNA19125

E2.11



PENETRATION DETAILS HAVE BEEN REMOVED FROM PROJECT. EXISTING PATHWAYS AND PENETRATIONS SHALL BE RE-USED WITHIN SCOPE OF WORK.

1 ELECTRICAL - ROOF PLAN - PART B 1/8" = 1'-0"

GENERAL NOTES:

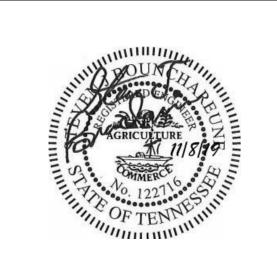
- A. UPDATE PANELBOARD DIRECTORIES AS REQUIRED PER NEC 408.
- B. FULLY COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
- C. CONTRACTOR TO PERFORM A COMPLETE SITE INVESTIGATION TO VERIFY EXISTING CONDITIONS PRIOR RO BID.
- D. BREAKER SIZES INDICATED FOR MECHANICAL EQUIPMENT ARE PER EXISTING DOCUMENTS. IF EXISTING BREAKERS FOR RE-USE DO NOT EXIST, PROVIDE NEW BREAKERS.
- E. ALL NEW BREAKERS PROVIDED SHALL BE AS RECOMMENDED BY EXISTING ELECTRICAL EQUIPMENT MANUFACTURER. BREAKERS SHALL MATCH EQUIPMENT AIC RATING.

KEYED NOTES:

- 1. CONNECT TO EXISTING CONVENIENCE OUTLET CIRCUIT ON ROOF IN THIS AREA.
- 2. INTERFACE NEW DUCT SMOKE DETECTORS WITH EXISTING FIRE ALARM SYSTEM SERVING BUILDING. RE-TEST AND TROUBLESHOOT FIRE ALARM SYSTEM FOR FUNCTIONALITY AFTER INSTALLATION.
- 3. PROVIDE 3#10, #10G, IN 1"C. TO A NEW 30A/3P BREAKER IN EXISTING PANELBOARD 'HK'. REMOVE EXISTING 40A/3P BREAKER AS REQUIRED FOR NEW BREAKER. ROUTE TO NEW VFD SERVING UNIT.
- 4. PROVIDE 3#12, #12G, IN 3/4"C. TO EXISTING 20A/3P BREAKER IN EXISTING PANELBOARD 'HK'. ROUTE TO NEW VFD SERVING UNIT. INTERFACE NEW UNIT WITH EXISTING KITCHEN HOOD CONTROL PANEL.

The existing duct smoke detectors indicated on sheets E-211 and E-212 at the air handling units to be removed shall remain and be re-used. The existing fire alarm wiring to indicated duct smoke detectors shall also remain within project scope.





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ELECTRICAL - ROOF PLAN - PART B

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E2.12

1. REFERENCE

1.A. GENERAL CONTRACT PROVISIONS APPLY TO THE WORK OF THIS SECTION. 1.B. CODE: COMPLY WITH THE REQUIREMENTS OF THE GOVERNING BUILDING CODE, AND AUTHORITIES HAVING JURISDICTION. 1.C.PROVIDE ALL NECESSARY PERMITS AND APPROVALS AND PAYING ALL REQUIRED FEES IN CONNECTION WITH THE WORK OF THIS CONTRACT. 1.D.SUBMITTALS: WITH MANUFACTURER'S STANDARD DATA, INSTALLATION INSTRUCTIONS AND SPECIFICATIONS, SUBMIT SAMPLES FOR EACH ITEM AS REQUIRED. 1.E. ALL ELECTRICAL MATERIALS AND APPLIANCES SHALL HAVE THE LISTING OF THE UNDERWRITER'S LABORATORIES, INC., AND TYPES APPROVED BY LOCAL AUTHORITIES HAVING JURISDICTION.

2. WORK INCLUDED

2.A. THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS ARE INTENDED TO SECURE THE PROVISIONS OF ALL MATERIAL AND LABOR NECESSARY FOR THE COMPLETE INSTALLATIONS, TESTED AND READY FOR SERVICE, TOGETHER WITH COMPLETE ELECTRICAL WORK AS CALLED FOR HEREIN AND AS INDICATED ON THE DRAWINGS. WHEN CONFLICTS OCCUR IN THE SPECIFICATIONS OR ON THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE 2.B. COMPLETE WIRING SYSTEMS FOR LIGHTING AND POWER INSTALLATION, HVAC,

PLUMBING AND SPRINKLER SYSTEMS AND MISCELLANEOUS DEVICES. 2.C.A GENERAL DESCRIPTION OF THE ELECTRICAL WORK IS AS FOLLOWS:

2.C.A. ELECTRICAL SERVICE INSTALLATION. 2.C.B. BRANCH CIRCUIT WIRING, SWITCHES, RECEPTACLES, TELEPHONE AND SIGNAL OUTLETS.

2.C.C. LIGHTING FIXTURES AND LAMPS. 2.C.D. POWER WIRING TO MECHANICAL EQUIPMENT.

2.C.E. CUTTING AND ROUGH PATCHING 2.C.F. FURNISHING AND SETTING OF ALL SLEEVES THROUGH FLOORS, WALLS, WHERE REQUIRED. INCLUDING WATERPROOF AND FIREPROOF SEALING.

2.C.G. CORE DRILLING ASSOCIATED WITH THE ELECTRICAL WORK. 2.C.H. TESTS AND INSPECTIONS OF ALL SYSTEMS UNDER THIS SECTION. 2.C.I. TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.

2.C.J. PAYING ALL FEES AND PERFORMING ALL TESTING AND ADJUSTING, AND FURNISHING ALL CERTIFICATES OF APPROVAL. 2.C.K. RELOCATION AND/OR REMOVAL OF EXISTING ELECTRICAL WORK IN ACCORDANCE WITH DEMOLITION SCHEME, OR AS DIRECTED AND REQUIRED.

RESTORATION OF ELECTRICAL SERVICE IN AFFECTED ADJOINING AREAS WHICH ARE TO CONTINUE TO FUNCTION.

2.C.L. POWER DISTRIBUTION SYSTEM 2.C.M. SAFETY DISCONNECT SWITCHES WHERE REQUIRED, UNLESS FURNISHED WITH STARTERS OR ON EQUIPMENT.

2.C.N. GROUNDING AS REQUIRED BY CODE. 2.C.O. IDENTIFICATION OF EQUIPMENT.

2.C.P. PRIME PAINTING ELECTRICAL EQUIPMENT AND INSTALLATION COMPONENTS. 2.C.Q. FIRE ALARM, SMOKE DETECTION AND SPRINKLER ALARM SYSTEMS. 2.C.R. CABLE SUPPORT AND PULLBOXES.

2.C.S. INSTALLATION AND WIRING OF STARTERS AND CONTROLLERS. ALL REQUIRED CONDUIT AND WIRING FOR AUTOMATIC TEMPERATURE, SAFETY AND INTERLOCKING CONTROLS PERTAINING TO HVAC, PLUMBING, FIRE PROTECTION OR ELECTRICAL SYSTEMS AS CALLED FOR ON DRAWINGS AND SPECIFICATIONS.

2.C.U. HANGERS, ANCHORS, INSERTS, SUPPORTS, SLEEVES, CHASES. 2.C.V. RIGGING, SCAFFOLDING AND HANDLING OF ALL MATERIALS AND EQUIPMENT. 2.C.W. AS-BUILT DRAWINGS.

3. RELATED WORK SPECIFIED IN OTHER SECTIONS

2.C.T. INSTALLATION OF EQUIPMENT FURNISHED BY OTHERS.

3.A. THE FOLLOWING WORK. RELATED TO THIS SECTION. WILL BE FURNISHED AND/OR PERFORMED UNDER OTHER SECTIONS OF THE SPECIFICATIONS, OR BY OTHERS, AND SHALL NOT BE CONSIDERED AS PART OF THE WORK OF THIS SECTION: 3.A.A. FURNISHING MOTOR STARTERS AND ALL CONTROL DEVICES FOR MOTORS AND EQUIPMENT SPECIFIED UNDER OTHER CONTRACTS. 3.A.B. OPENINGS FOR SLEEVES IN WALLS AND FLOOR SLABS.

3.A.C. FINISH PAINTING. 3.A.D. FINISH PAINTING OF EXPOSED CONDUITS, BOXES, HANGERS, APPARATUS, ETC. 3.A.E. TEMPERATURE AND MOTOR CONTROL WIRING, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

4. SUBMITTALS

4.1. SUBMIT SHOP DRAWINGS COMPLETE IN EVERY DETAIL COVERING THE FOLLOWING ITEMS AS DESCRIBED IN THE CONTRACT DOCUMENTS OR AS MAY BE REQUIRED BY THE ARCHITECT: 4.1.A.A. FIRE ALARM SYSTEM

4.1.B. AFTER FINAL TESTS AND ADJUSTMENTS, FULLY INSTRUCT OWNER'S PERSONNEL IN ALL DETAILS OF OPERATION FOR EQUIPMENT INSTALLED. PROVIDE MULTIPLE COPIES OF OPERATION AND MAINTENANCE MANUALS PER SYSTEM AS

5. EXAMINATION OF EXISTING CONDITIONS OF PREMISES

5.A. BEFORE SUBMITTING THE BID, THIS CONTRACTOR SHALL VISIT THE SITE OF THE WORK AND SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AFFECTING THE WORK. NO EXTRA PAYMENTS WILL BE ALLOWED ON ACCOUNT OF EXTRA WORK MADE NECESSARY BY FAILURE TO DO SO. 5.B. EXAMINE ALL WORK PREPARED BY OTHERS TO RECEIVE THE WORK OF THIS SECTION AND REPORT ANY DEFECTS AFFECTING INSTALLATION TO THE GENERAL CONTRACTOR FOR CORRECTION. COMMENCEMENT OF WORK WILL BE CONSTRUED AS COMPLETE ACCEPTANCE OF PREPARATORY WORK BY OTHERS.

5.C.PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. SUBMIT FOR APPROVAL, DATE SCHEDULE OF NECESSARY TEMPORARY SHUTDOWNS OF EXISTING SERVICES. MAKE THESE WITHOUT ADDITIONAL CHARGE AT SUCH TIME AS WILL NOT INTERFERE WITH REGULAR OPERATION OF EXISTING FACILITIES AND ONLY AFTER WRITTEN APPROVAL OF OWNER. TO INSURE CONTINUOUS OPERATION, MAKE NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK WHEN SO REQUIRED. 5.D.CONTRACTOR SHALL TEST ALL EXISTING BRANCH CIRCUITS IN EXISTING PANELBOARDS PRIOR TO RE-USING SAID BRANCH CIRCUITS FOR THIS PROJECT.

TESTING SHALL BE DONE DURING PREMIUM TIME, UNLESS APPROVED BY BUILDING OWNER AND EXISTING TENANTS.

6. COORDINATION OF WORK WITH OTHER TRADES

DEFECTIVE EQUIPMENT AND ITS REPLACEMENT.

6.A. THE WORK OF THIS SECTION SHALL BE COORDINATED WITH THE WORK OF ALL OTHER CONTRACTS, THE UTILITY COMPANY, AND OF THE TELECOMMUNICATIONS COMPANY, AND SHALL BE SO ARRANGED THAT THERE WILL BE NO DELAY IN THE PROPER INSTALLATION AND COMPLETION OF ANY PART OR PARTS OF EACH RESPECTIVE WORK WHEREIN IT MAY BE INTERRELATED WITH THAT OF THIS CONTRACT SO THAT GENERALLY ALL CONSTRUCTION WORK CAN PROCEED IN ITS NATURAL SEQUENCE WITHOUT UNNECESSARY DELAY.

7. MATERIAL AND WORKMANSHIP

7.A. ALL MATERIAL SHALL BE NEW AND OF THE BEST QUALITY AND SHALL HAVE THE APPROVED UNDERWRITER'S LABEL ATTACHED. THE LABEL OF APPROVAL SHALL BE OF THE TYPE FOR THE INTENDED APPLICATION. THE WORK THROUGHOUT SHALL BE EXECUTED IN THE BEST AND MOST THOROUGH MANNER UNDER THE DIRECTION OF, AND TO THE SATISFACTION OF, THE OWNER WHO WILL INTERPRET THE MEANINGS OF THE DRAWINGS AND SPECIFICATIONS, AND THE OWNER SHALL HAVE THE POWER TO REJECT ANY PROBET PANTO ON A PER PAILS WHAVEH PER PHREIMON FROM OF ROME OF LEXISTING PATHWAYS CONFORMAMOND THE STREET MATHIONS SHALL BE RE-USED WITHIN SCOPE OF WORK. 7.B. IF, AFTER INSTALLATION, OPERATION OF THE EQUIPMENT PROVES TO BE UNSATISFACTORY TO THE OWNER BY REASONS OF DEFECTS, ERRORS OR OMISSIONS, THE OWNER RESERVES THE RIGHT TO OPERATE THE EQUIPMENT UNTIL IT CAN BE REMOVED FROM SERVICE FOR CORRECTION BY THE CONTRACTOR. THE CONTRACTOR SHALL PAY FOR ALL DAMAGES TO WORK OF OTHER TRADES CAUSED BY THIS

8. INSPECTION AND TESTS

8.A. AT THE TIME OF THE FINAL INSPECTION AND TESTS, ALL CONNECTIONS AT PANELS AND ALL SPLICES, ETC., MUST BE MADE. ALL FUSES MUST BE IN PLACE AND THE CIRCUITS CONTINUOUS FROM SERVICE SWITCHES TO ALL PANELS, RECEPTACLES, OUTLETS, MOTORS, ETC. EACH ENTIRE WIRING SYSTEM MUST TEST FREE FROM ALL SHORT CIRCUITS AND FROM GROUNDS AS REQUIRED BY THE N.E.C..

9. RACEWAYS AND CONDUCTORS:

9.A. RACEWAY AND CONDUCTOR WORK SHALL CONSIST OF THE VARIOUS TYPES OF CONDUITS, SUPPORTS AND FITTINGS AS SPECIFIED AND REQUIRED FOR AN APPROVED INSTALLATION IN ACCORDANCE WITH THE FOLLOWING GUIDELINES: 9.A.A. TYPE EMT SHALL BE USED FOR ALL INDOOR CONDUIT AND TYPE PVC CONDUIT SHALL BE USED FOR ALL EXTERIOR AND UNDERGROUND CONDUIT, AS APPROVED BY AUTHORITY HAVING JURISDICTION. 9.A.B. MECHANICALLY JOIN ALL METAL RACEWAYS. ENCLOSURES AND RACEWAYS FOR CONDUCTORS TO FORM A CONTINUOUS ELECTRICAL CONDUCTOR. CONNECT ALL ELECTRICAL BOXES, FITTINGS AND CABINETS SO AS TO PROVIDE AN EFFECTIVE ELECTRICAL CONTINUITY AND A FIRM MECHANICAL ASSEMBLY. 9.A.C. INSTALL RACEWAYS SO THAT REQUIRED CONDUCTORS MAY BE DRAWN IN WITHOUT INJURY OR EXCESSIVE STRAIN TO THE RACEWAY OR CABLE. 9.A.D. DO NOT CROSS PIPE SHAFTS OR VENT DUCT OPENINGS WITH RACEWAYS. ROUTE RACEWAYS TO AVOID PRESENT OR FUTURE OPENINGS IN FLOORS, WALLS, OR CEILING CONSTRUCTION. WHEN SO INDICATED ON THE DRAWINGS. 9.A.E. INSTALL RACEWAYS TO AVOID PROXIMITY TO STEAM AND HOT WATER PIPES. KEEP RACEWAYS A MINIMUM OF 3" FROM SUCH PIPES. 9.A.F. KEEP ENDS OF RACEWAYS PLUGGED OR CAPPED DURING CONSTRUCTION. 9.A.G. PROVIDE EXPANSION - DEFLECTION FITTINGS IN ALL RACEWAYS PASSING THROUGH STRUCTURAL EXPANSION JOINTS. 9.A.H. FEEDERS TO PANELS SHALL BE IN CONDUIT. 9.B. BRANCH CIRCUIT/FEEDER WIRING SHALL BE AS FOLLOWS: 9.C. ALL BRANCH CIRCUIT WIRING SHALL BE INSULATED COPPER CONDUCTORS

9.D. ALUMINUM EQUIVALENT FEEDERS MAY BE USED FOR SIZES OVER #8 AWG. 9.E. TYPE MC CABLE MAY BE USED AS APPROVED AUTHORITY HAVING JURISDICTION,

(MINIMUM #12 AWG). TYPE THHN-THWN and XHHW-2. XHHW-2.

9.F. DIRECT BURIAL CABLE: UF OR USE CABLE.

10. SAFETY SWITCHES

11. MOLDED CASE CIRCUIT BREAKERS

11.A. SINGLE, 2 OR 3 POLE AS NOTED.

11.B. THERMAL - MAGNETIC TYPE.

ASSUMING POSITION DISTINCTIVE FROM NORMAL "ON" AND "OFF" POSITIONS.

11.F. BOLTED TYPE CONSTRUCTION. 11.G. ENCLOSURE COMPENSATED.

12.A. SWITCHES SHALL BE HEAVY DUTY, TOGGLE, QUIET TYPE, FULLY ENCLOSED IN AND FINISH TO BE DETERMINED BY ARCHITECT. WHERE MORE THAN ONE SWITCH IS BEING INSTALLED, PROVIDE MULTIPLE GANG SWITCH PLATES FOR NUMBER OF SWITCHES AS REQUIRED. NEMA STANDARDS. STYLE AND FINISH TO BE DETERMINED BY ARCHITECT. COORDINATE W/ARCH TYPE OF FACEPLATE MULTI-GANG PLATES WHEN MOUNTING DEVICES SIDE BY SIDE. 12.D. FLOOR BOXES SHALL BE HUBBELL B25 SERIES OR APPROVED EQUAL. COORDINATE FINAL FINISH WITH ARCHITECT.

13. COORDINATION

13.A. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH THAT OF THE CONTRACTOR FOR GENERAL CONSTRUCTION AND WITH THE CONTRACTORS FOR THE

14.A. GENERAL - PROVIDE WIRING FROM SWITCHES AND PANELBOARDS TO CURRENT CONSUMING APPLIANCES OR CONTROL DEVICES.

15. REMOVAL OF EXISTING WORK

ELECTRICAL WORK SO INDICATED OR REQUIRED BY REMOVAL OF OR CHANGES IN EXISTING CONSTRUCTION. DISCONNECT LOAD AND LINE ENDS OF CONDUCTORS ARE TO BE REMOVED OR ABANDONED. REMOVE CONDUCTORS FROM EXISTING CONDUITS THROUGH WHICH NEW CONDUCTORS ARE TO BE PULLED. CUT AND CAP FLUSH WITH FLOOR ALL ABANDONED CONDUITS. REMOVE ABANDONED SURFACE SIZE AND TYPE OF BLANK COVER PLATE OVER EACH OUTLET.

16. SHUTDOWNS

16.A. WHEN INSTALLATION OF A NEW SYSTEM REQUIRES THE TEMPORARY SHUTDOWN OF AN EXISTING OPERATING SYSTEM. THE CONNECTION OF THE NEW SYSTEM SHALL BE PERFORMED AT SUCH TIME AS DESIGNATED BY THE OWNER. 16.B. THE OWNER SHALL BE NOTIFIED OF THE ESTIMATED DURATION OF THE SHUTDOWN PERIOD IN ADVANCE OF THE DATE THE WORK IS TO BE PERFORME 16.C. WORK SHALL BE ARRANGED FOR CONTINUOUS PERFORMANCE, INCLUDING NECESSARY CONNECTIONS.

17.A. AT THE END OF EACH WORKING DAY, THIS CONTRACTOR SHALL DEPOSIT ALL DEBRIS PERTAINING TO HIS TRADE AT A SPOT ON EACH FLOOR, DESIGNATED BY THE GENERAL CONTRACTOR WHO WILL DISPOSE OF SAID DEBRIS. 17.B. PROVIDE A COMPETENT SUPERINTENDENT WHO SHALL BE IN CHARGE OF THE WORK TO BE INSTALLED UNDER THIS SECTION OF THE SPECIFICATIONS.

18. ADDRESSABLE, CODED FIRE ALARM, SMOKE AND SPRINKLER ALARM SYSTEM

18.A. THE ADDRESSABLE, CODED FIRE ALARM, SMOKE ALARM SYSTEM IS EXISTING AND INTERFACE SHALL CONSIST OF THE MINIMUM:

18.A.A. DUCT TYPE SMOKE DETECTORS. 18.A.B. FAN SHUTDOWN CONTROL RELAYS.

SAMPLING TUBE FOR DUCT MOUNTING.

18.A.C. AIR HANDLING FAN SHUTDOWN CONTROL.

18.A.E. ALARM AT FACP.

18.C. CIRCUITING GUIDELINES:

LOADING. 18.C.B. LOOP SHALL HAVE CLASS B OPERATION.

18.C.C. PROVIDE 1 ALARM CODE FOR EACH PULLSTATION. 18.C.D. PROVIDE 1 ALARM CODE FOR EACH DUCT DETECTOR.

18.C.E. PROVIDE SPRINKLER VALVE SUPERVISORY SWITCHES. 18.D. ADDRESSABLE DUCT SMOKE DETECTOR, ANALOG PHOTOELECTRIC TYPE. INTEGRAL MICROPROCESSOR. FORM C CONTACTS FOR FAN SHUTDOWN. PROVIDE

10.A. TYPE A, 250 VOLT, SINGLE THROW, FUSED OR UNFUSED IN APPROVED NEMA 10.B. SWITCHES SHALL BE HORSEPOWER RATED, HEAVY DUTY, QUICK-MAKE, QUICK-

11.C. AUTOMATIC TRIPPING: CLEARLY INDICATED BY HANDLE AUTOMATICALLY

11.D. INVERSE TIME - LIMIT CHARACTERISTICS - TO PREVENT TRIPPING OR MOMENTARY OVERLOADS, BUT TRIP BEFORE DANGEROUS VALUES ARE REACHED. 11.E. INTERRUPTING CAPACITIES REFERRED TO ARE ASYMMETRICAL VALUES.

11.H. "E" FRAME, SINGLE, 2 OR 3 POLE, 10,000 AMPERE INTERRUPTING CAPACITY AT 208 VOLTS UNLESS OTHERWISE NOTED.

12. WIRING DEVICES

COMPOSITION CASES. SWITCHES SHALL BE RATED 20 AMP, 120/277 VOLTS, AC. STYLE 12.B. RECEPTACLES SHALL BE THE GROUNDING TYPE, COMPOSITION BASE, MEETING 12.C. FACEPLATES FINISH AND STYLE TO BE DETERMINED BY ARCHITECT. PROVIDE

OTHER MECHANICAL TRADES.

14. POWER WIRING SYSTEM

PANELBOARDS, LIGHTS, SWITCHES, RECEPTACLES, JUNCTION BOXES AND ALL OTHER

15.A. REMOVE AND/OR RELOCATE ALL ELECTRICAL EQUIPMENT, WIRING ANDOTHER FEEDING PANELBOARDS, CONTROLLERS, MOTORS, APPLIANCES, AND DEVICES WHICH MOUNTED CONDUITS. REMOVE MATERIAL AND EQUIPMENT AND DISPOSE OF SAME AS DIRECTED. WHERE ANY FIXTURE OR WIRING DEVICE IS REMOVED, PROVIDE ADEQUATE

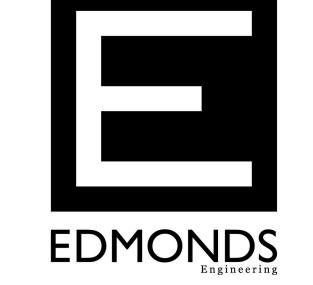
OVERTIME, AT NO EXTRA COST TO THE OWNER TO ASSURE THAT EXISTING OPERATION SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE

17. GENERAL

18.A.D. BATTERY STANDBY.

18.A.F. TROUBLE AT FACP. 18.B. SYSTEM SHALL MEET NFPA72, LOCAL AND STATE BUILDING CODES, AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

18.C.A. EACH ADDRESSABLE LOOP SHALL CONTAIN NO MORE THAN 80% DEVICE



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ELECTRICAL -SPECIFICATIONS

DESCRIPTION

REVISIONS

BNA19125